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FATTY DEGENERATION OF THE LIVER AND KIDNEYS IN THE DOG APPARENTLY ASSOCIATED WITH DIET

A Preliminary Note

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In the course of a series of experiments planned by, and partly carried out under the direction of, the late Surg. Joseph Goldberger, which were designed to test the blacktongue preventive potency of salt pork, pork-fat lard, and canned haddock in the dog, Goldberger and Sebrell, as early as the summer of 1928 observed at autopsy pathological changes which had not been previously noted in this laboratory, and which have seemed significant enough to warrant further investigation.

Five dogs were offered a diet identical with our diet No. 302 (which, as Goldberger, Wheeler, Lillie, and Rogers (1) have shown, has little or no blacktongue preventive potency) except that the cottonseed oil is quantitatively replaced by lard. (Table 1.) All five of the animals developed blacktongue, and one died with severe blacktongue and presented the usual autopsy findings. The other four dogs survived the acute attack of blacktongue and continued to present varying degrees of reddening of the mucosa of the mouth until the time of death. At autopsy these four animals presented a fatty degeneration of the liver and kidneys.

In the salt-pork experiment our diet No. 302 was modified to include 153 grams of salt pork per 2,400 calorie ration; the salt pork replaced the cottonseed oil and necessitated a reduction in the amount of casein present in order to compensate for the protein added by the salt pork. (Table 2.) Eight dogs were offered suitable portions of this diet. Seven of these animals developed blacktongue. The eighth animal died 104 days from the beginning of the experiment without having shown any signs of blacktongue, and presented at autopsy a marked fatty degeneration of the liver and kidneys. One of the remaining seven dogs died with blacktongue early in the experiment, and there was no evidence of fatty degeneration of the liver and kidneys at autopsy. The other six animals died in the course of the experiment or were killed when moribund, and presented fatty degeneration of the liver and kidneys at autopsy, with or without signs of blacktongue.

In the canned haddock experiment, our diet No. 123 (which, as Goldberger, Wheeler, Lillie, and Rogers (2) have shown, has little if any blacktongue preventive value) was modified to include 385 grams of canned haddock per 2,400 calorie ration. (Table 3.) Six dogs were offered suitable portions of this diet. None of these animals showed any signs of blacktongue and three were maintained in good condition for a period of 20 months. The other three died (or were killed when moribund) in the course of the experiment, and presented a marked fatty degeneration of the liver and kidneys at autopsy.

Goldberger, Wheeler, Lillie, and Rogers (1) have already reported the failure of a diet (diet No. 302) containing 110 grams of cottonseed oil per 2,400 calorie ration (Table 4) to prevent blacktongue. Five of the dogs that developed blacktongue on this diet were treated with a daily dose of 2 grams of P-P solid per kilogram of normal body weight. (The blacktongue-preventive potency of this P-P solid has been demonstrated by Goldberger, Wheeler, Lillie, and Rogers in a previous report (2).) Three of the five dogs died while on this treatment. One presented signs shortly before death suggestive of a beginning attack of blacktongue. All presented fatty degeneration of the liver and kidneys at autopsy. The remaining two dogs were maintained in good condition until the termination of the experiment, approximately 22 months from the beginning of the treatment with P-P solid.

Except in the dogs in which blacktongue developed shortly before death, all the animals presenting fatty degeneration of the liver and kidneys at autopsy died suddenly and without showing any clearly recognizable signs of illness until shortly before death, at which time the animal usually appeared weak and lethargic, rapidly passed into coma, and died in 24 to 48 hours. In several instances dogs that appeared normal in the afternoon were found in coma the next morning.

The autopsy findings were, in general, similar in all cases, the individual variations being mainly in the extensiveness of the lesions. The most striking gross changes were found in the liver. It was approximately normal in size; the color varied from a faint yellow mottling to a bright yellow, marked with fine threads of liver tissue following the outlines of the lobules; it was friable, greasy in feel and appearance, and on cut section the changes noted on the surface were found to extend throughout the liver substance. In some cases the fat had replaced the liver tissue to such an extent that there appeared to be only a very small amount of normal tissue present.

The kidneys were about normal in size and shape, and the capsule stripped without difficulty. On section the cortex appeared to be pale and there was a distinct difference in color between the internal and external halves of the cortex; the external half was light brown in color, while the internal half was yellowish, and the kidney tubules stood out distinctly as fine yellowish white lines.

The spleen was normal in size, shape, and color, but on section there appeared to be some atrophy of the splenic pulp and the trabeculae stood out more distinctly than normal.

The heart muscle in most cases was quite flabby and appeared pale.

The urinary bladder was in some cases found distended, and in those cases in which the urine was removed and examined it was found to be cloudy, highly colored, and contained albumin; in some instances casts and red blood cells were found.

Passed Asst. Surg. R. D. Lillie, of the United States Public Health Service, has made microscopic examinations of the tissues, and he reports fatty degeneration of the liver cells, heart muscle, and kidney tubules.

One of the autopsies was witnessed by a skilled veterinarian who expressed the opinion that the condition was not one of the common, naturally occurring canine diseases.

Denton (3) has described the pathology of blacktongue as seen in the dogs in our laboratory, and the fatty degenerations described above were not noted; furthermore, in the course of several years' experiments on various foodstuffs, in which many cases of blacktongue have been produced by Goldberger and his associates, the fatty degenerations have never been noted.

That the condition is not infectious is indicated by the fact that the dogs are kept indiscriminately mixed in the same rooms, and in adjoining kennels with dogs on stock diet, and no dog on stock diet has shown the condition.

In order further to rule out the possibility of infection, two dogs were given an intraperitoneal injection of 2 cubic centimeters of liver emulsion prepared from a liver showing marked fatty degeneration. The injected animals showed no evidence of disease and remained apparently normal during a period of observation of 28 days.

It therefore appears that we have here a pathological entity, different from blacktongue, probably associated in some manner with the diet, and characterized by a fatty degeneration of liver and kidney, sometimes accompanied by a fatty degeneration of the heart muscle and an atrophic condition of the spleen.

The cause and nature of this condition are problems now under further investigation at this laboratory.

REFERENCES

- (1) Goldberger, Wheeler, Lillie, and Rogers: A study of the blacktongue preventive action of 16 foodstuffs, with special reference to the identity of blacktongue of dogs and pellagra of man. *Pub. Health Rep.*, vol. 43, No. 23 (June 8, 1928), pp. 1385-1454. (Reprint No. 1231.)
- (2) Goldberger, Wheeler, Lillie, and Rogers: A further study of experimental blacktongue, with special reference to the blacktongue preventive in yeast. *Pub. Health Rep.*, vol. 43, No. 12 (Mar. 23, 1928), pp. 657-694. (Reprint No. 1216.)

(3) Denton: A study of the tissue changes in experimental blacktongue of dogs compared with similar changes in pellagra. *Am. Jour. of Path.*, 1928, vol. 4, No. 4, pp. 341-351.

(4) McCollum, Simmonds, Shipley, and Park: Studies on experimental rickets, etc. *Bull. Johns Hopkins Hosp.*, 1922, vol. 33, p. 298.

(5) Osborne and Mendel: The nutritive value of the wheat kernel, etc. *J. Biol. Chem.*, 1919, vol. 37, p. 572.

TABLE 1.—Composition of lard diet No. 302A¹

[Total calories, 2,400]

Articles of diet	Quantity	Nutrients		
		Protein	Fat	Carbo- hydrate
	Grams	Grams	Grams	Grams
Corn meal ¹	310	23.3	13.0	204.0
Casein (purified) ²	80	72.5	.5	-----
Lard ³	110	-----	110.0	-----
Cod-liver oil.....	10	-----	10.0	-----
Salt mixture ⁴	21	-----	-----	-----
Total nutrients.....	-----	95.8	133.5	204.0
Nutrients per 1,000 calories.....	-----	39.9	55.6	85.0

¹ The maize meal and salt mixture are stirred into water and cooked 1½ hours. The other ingredients are then well stirred in and the final weight is brought to 2,400 grams with water (so that 1 gram represents 1 calorie). The mixture is served to the dog in suitable calorie portions.

² Whole white maize meal not sifted.

³ Commercial casein leached for a week in daily changes of acidulated water, after McCollum (4).

⁴ A pure pork fat lard obtained on the local market.

⁵ After Osborne and Mendel (5).

TABLE 2.—Composition of salt pork diet No. 321¹

[Total calories, 2,400]

Articles of diet	Quantity	Nutrients		
		Protein	Fat	Carbo- hydrate
	Grams	Grams	Grams	Grams
Corn meal ¹	310	23.3	13.0	204.0
Casein (purified) ²	65	58.9	.4	-----
Salt pork ³	153	12.9	110.5	-----
Cod-liver oil.....	10	-----	10.0	-----
Salt mixture ⁴	21	-----	-----	-----
Total nutrients.....	-----	95.1	133.9	204.0
Nutrients per 1,000 calories.....	-----	39.6	55.7	85.0

¹ The maize meal and salt mixture are stirred into water and cooked 1½ hours. The other ingredients are then well stirred in and the final weight is brought to 2,400 grams with water (so that 1 gram represents 1 calorie). The mixture is served to the dog in suitable calorie portions.

² Whole white maize meal not sifted.

³ Commercial casein leached for a week in daily changes of acidulated water, after McCollum (4).

⁴ Edible portion salt bellies obtained on local market.

⁵ After Osborne and Mendel (5).

TABLE 3.—Composition of canned haddock diet No. 315¹

[Total calories, 2,400]

Articles of diet	Quantity	Nutrients		
		Protein	Fat	Carbo- hydrate
	<i>Grams</i>	<i>Grams</i>	<i>Grams</i>	<i>Grams</i>
Corn meal ²	400	33.6	18.8	296.0
Cowpeas (<i>Vigna sinensis</i>) ³	50	10.7	.7	30.4
Flaked haddock ⁴	385	82.4	.8	.....
Cane sugar.....	17	.....	.....	17.0
Wesson oil.....	25	.....	25.0	.....
Cod-liver oil.....	12	.....	12.0	.....
Sodium chloride.....	10	.....	.....	.....
Calcium carbonate.....	3	.....	.....	.....
Total nutrients.....	.....	126.7	57.3	343.4
Nutrients per 1,000 calories.....	.....	52.7	23.8	143.0

¹ The corn meal, cowpeas (previously coarsely ground), and sodium chloride are stirred into water and cooked 1½ hours. Then the other ingredients are well stirred in and the total weight is brought to 2,400 grams with water (so that 1 gram represents 1 calorie). The mixture is served to the dog in suitable calorie portions.

² Whole white maize meal sifted as for human consumption.

³ The variety known as the California black-eyed pea.

⁴ Canned cooked flaked haddock as purchased.

TABLE 4.—Composition of cottonseed oil diet No. 302¹

[Total calories, 2,400]

Articles of diet	Quantity	Nutrients		
		Protein	Fat	Carbo- hydrate
	<i>Grams</i>	<i>Grams</i>	<i>Grams</i>	<i>Grams</i>
Corn meal ²	310	23.3	13.0	204.0
Casein (purified) ³	80	72.5	.5	.....
Cottonseed oil (Wesson oil).....	110	.....	110.0	.....
Cod-liver oil.....	10	.....	10.0	.....
Salt mixture ⁴	21	.....	.....	.....
Total nutrients.....	.....	95.8	133.5	204.0
Nutrients per 1,000 calories.....	.....	39.9	55.6	85.0

¹ The maize meal and salt mixture are stirred into water and cooked 1½ hours. The other ingredients are then well stirred in and the final weight is brought to 2,400 grams with water (so that 1 gram represents 1 calorie). The mixture is served to the dog in suitable calorie portions.

² Whole white maize meal, not sifted.

³ Commercial casein leached for a week in daily changes of acidulated water, after McCollum (4).

⁴ After Osborne and Mendel (5).

FURTHER OBSERVATIONS ON THE EPIDEMIOLOGY OF NARCOTIC DRUG ADDICTION

By W. L. TREADWAY, *Surgeon, Chief of Narcotics Division, United States Public Health Service*

The authorization of two institutions for the treatment of drug addiction imposed additional duties upon the Public Health Service. Preliminary to the establishment of these two institutions it became necessary for the service to secure such information as would throw light upon the nature of the problem in hand and provide some data concerning the prospective inmates with whom the service would have to deal. The preliminary survey left much to be desired, because of the incomparableness of available data.

Through an arrangement with the Prohibition Unit of the Treasury Department, and through the courtesy of Deputy Commissioner of Prohibition L. G. Nutt, in charge of enforcement of narcotic laws, more detailed information was made available concerning each violator of the Federal narcotic laws. The information was furnished the service direct from the field and embraced certain individual and social data concerning each violator. Compilation of the information furnished is being made by the Public Health Service. The collection of data was inaugurated on July 1, 1929.

The compilation of certain data respecting violators of narcotic laws for the month of July, 1929, follows:

Of the 432 reported violations for July, 1929, 423 were unregistered under the Harrison narcotic law and 9 were registered. Of the unregistered group, 18 per cent were reported from Illinois and 11 per cent from Michigan. With the exception of those two States the per cent distribution was fairly uniform throughout the other States. Of the 423 unregistered individuals, 302, or 71 per cent, were reported as being addicted to the use of drugs; and the sex distribution of this group was 240 males and 62 females—a proportion of 1 female to 4 males. The unregistered nonaddicts comprised 99 males and 20 females; and 2 males were not known definitely to be addicts. Of the 423 unregistered violators, 314 were charged with violation of Federal law, 107 with violation of State law, and for 2 specific information of this character was not reported. The color distribution of the unregistered group is as follows: 190 white, 60 black, and 52 yellow.

Of the 302 addicts reported, 16 were illiterate, 35 could read and write, 173 had a common-school education, 56 had finished high school or better, and for 22 data were unreported concerning educational level. The accompanying tabulations give the age when drug addiction was established (Table 1), the drugs used (Table 2), how drugs were administered (Table 2), the daily dosage (Table 3), and the number of treatments previously received (Table 4).

Further data dealing with this subject will be published from time to time.

TABLE 1.—Age at which drug addiction was established

Age group	Unregistered			Registered		
	Total	Male	Female	Total	Male	Female
Under 15 years.....	2	2				
15 to 19 years.....	40	28	12			
20 to 24 years.....	81	65	16			
25 to 29 years.....	63	44	19			
30 to 34 years.....	39	31	8	1	1	
35 to 39 years.....	23	21	2			
40 to 44 years.....	5	4	1			
45 to 49 years.....	3	2	1			
50 to 54 years.....	3	3				
55 to 59 years.....	1	1				
60 years and over.....	2	2				
Unknown.....	40	37	3			
Total.....	302	240	62	1	1	

TABLE 2.—Drug used by addicts and how administered

Drug of choice	Unregistered			Registered		
	Total	Male	Female	Total	Male	Female
Morphine.....	192	145	47	1	1	
Codeine.....						
Heroin.....	19	18	1			
Other forms—laudanum, paregoric, etc.....						
Opium not otherwise specified.....	61	58	3			
Morphine and heroin.....	8	3	5			
Morphine and opium.....	2	1	1			
Heroin and opium.....	1	1				
Morphine, heroin, and other forms.....	1		1			
None.....	14	13	1			
Unknown.....	4	1	3			
Total.....	302	240	62	1	1	
Cocaine.....	76	56	20			
None.....	222	183	39			
Unknown.....	4	1	3			
Total.....	302	240	62			
Hemp.....	1	1				
None.....	296	237	59			
Unknown.....	5	2	3			
Total.....	302	240	62			

How drug was administered	Unregistered			Registered		
	Total	Male	Female	Total	Male	Female
By mouth.....	3	2	1			
By hypodermic.....	218	166	52	1	1	
By mouth and hypodermic.....	3		3			
By smoking.....	60	57	3			
By other methods.....	7	7				
By "sniffing" and hypodermic.....	2	2				
By mouth and smoking.....	1	1				
Unknown.....	8	5	3			
Total.....	302	240	62	1	1	

TABLE 3.—Daily dose of drug used by addicts

Drug and daily dose	Unregistered			Registered		
	Total	Male	Female	Total	Male	Female
<i>Opium alkaloids</i>						
Less than ½ grain.....	1		1			
½ grain, but less than 1 grain.....	1	1				
1 grain, but less than 2 grains.....	10	8	2			
2 grains, but less than 3 grains.....	13	10	3	1	1	
3 grains, but less than 5 grains.....	35	26	9			
5 grains, but less than 10 grains.....	83	68	15			
10 grains, but less than 15 grains.....	44	35	9			
15 grains, but less than 20 grains.....	16	12	4			
20 grains or more.....	29	23	6			
Smoking opium gum—quantity unknown.....	13	11	2			
Unknown quantity.....	44	34	10			
None.....	13	12	1			
Total.....	302	240	62	1	1	
<i>Coca leaf alkaloids</i>						
Less than ½ grain.....						
½ grain, but less than 1 grain.....						
1 grain, but less than 2 grains.....	1	1				
2 grains, but less than 3 grains.....	4	2	2			
3 grains, but less than 5 grains.....	5	4	1			
5 grains, but less than 10 grains.....	17	13	4			
10 grains, but less than 15 grains.....	11	9	2			
15 grains, but less than 20 grains.....	6	5	1			
20 grains or more.....	8	5	3			
Unknown quantity.....	28	18	10			
None.....	222	183	39			
Total.....	302	240	62			
<i>Other drugs</i>						
Unknown quantity.....	7	4	3			
None.....	295	236	59			
Total.....	302	240	62			

TABLE 4.—Number of treatments taken for addiction

Number of treatments	Unregistered			Registered		
	Total	Male	Female	Total	Male	Female
1 treatment.....	53	42	11	1	1	
2 treatments.....	13	10	3			
3 treatments.....	6	4	2			
4 treatments.....	1	1				
5 treatments.....						
6 treatments.....						
7 treatments.....						
8 treatments.....						
9 treatments.....	1	1				
10 or more treatments.....	2	1	1			
Unknown.....	51	42	9			
None.....	175	139	36			
Total.....	302	240	62	1	1	

A STUDY OF NEGRO INFANT MORTALITY *

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A study of negro mortality among persons of all ages was published by the United States Public Health Service in 1928.¹ The age period under one year is so important from the point of view of mortality, however, that it seemed desirable to make a special study of death rates among negro infants. The present study was undertaken with a view to bringing together such data as are available on the causes and trend of negro² infant mortality as compared with the mortality of white infants. The material upon which the study is based was obtained from original tables prepared by the United States Census Bureau and from mortality records of the several States.

Urban and Rural Infant Mortality in Certain Northern and Southern States

In order to investigate the differences between urban and rural infant mortality rates, it was thought advisable to group Northern and Southern States separately, since the negro lives under such different conditions in the two sections. As infant mortality rates are preferably based upon the number of live births rather than upon the population under one year of age, the area to be studied was limited to those States which have been admitted to the birth-registration area.

TABLE 1.—*Infant mortality from all causes among white and colored in urban and rural areas of a group of Northern and Southern States, 1917-1927*

DEATHS PER 1,000 LIVE BIRTHS

Year	Northern *						Southern *					
	White			Colored			White			Colored		
	Total	Urban	Rural ⁴	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
1917.....	95.3	98.1	91.2	184.5	181.5	190.2	82.5	91.8	81.3	136.3	221.6	123.3
1918.....	103.0	105.0	100.2	198.2	191.8	211.8	85.8	108.7	82.7	144.7	238.3	131.1
1919.....	88.5	89.2	87.6	153.3	148.8	164.2	78.0	86.6	74.5	116.7	170.8	107.4
1920.....	87.5	90.3	83.0	163.7	165.0	160.1	71.0	77.7	69.8	113.6	178.8	100.6
1921.....	77.8	77.5	78.2	135.3	127.9	156.3	63.9	71.0	62.7	90.2	140.4	91.1
1922.....	77.0	79.2	73.8	132.6	130.9	149.6	66.5	73.6	65.2	105.4	144.6	97.7
1923.....	77.0	75.1	80.0	143.0	136.1	166.0	68.8	74.5	67.8	112.0	170.0	100.1
1924.....	69.7	70.6	68.3	125.9	123.8	133.8	65.4	68.9	64.7	108.6	156.1	97.9
1925.....	71.2	70.6	72.3	131.3	124.7	157.4	67.1	76.9	65.0	108.5	149.0	98.8
1926.....	73.6	73.0	74.6	134.3	131.3	146.0	71.3	80.5	69.3	110.9	161.4	98.7
1927.....	62.0	61.2	63.1	112.0	108.9	125.0	61.9	68.1	60.5	108.0	151.7	97.2

* Indiana, Michigan, New York, Ohio, Pennsylvania, and Maryland.

¹ Kentucky, North Carolina, and Virginia.

² Urban—cities of 10,000 and over.

⁴ Rural—the remainder of the State.

* From the Office of Statistical Investigations in cooperation with Field Investigations of Child Hygiene, U. S. Public Health Service.

¹ Public Health Bulletin No. 174 (1925).

² In the census tables, the total population is divided by race into white and colored. The negro rates in this paper are based on these figures, since in the States under consideration the percentage of the colored population which is other than negro is practically negligible.

Kentucky, North Carolina, and Virginia were grouped for contrast with a number of the more northern States, i. e., Indiana, Michigan, New York, Ohio, Pennsylvania, and Maryland.³ Although it would have been desirable to include more States in the southern group, only these three have been part of the birth-registration area since 1917, and it was thought preferable to base the study upon a constant area rather than to include additional States as they were admitted.

Infant mortality rates (Table 1, figs. 1 and 2) from 1917 to 1927 were plotted on semilogarithmic rather than on arithmetic paper, in order to make comparable the rates of decline in the various groups. White infant mortality rates have been tabulated and plotted for comparison with the negro rates.

In 1917 negro infant mortality was much higher in the northern than in the southern group. (Fig. 1.) Between 1917 and 1927 the

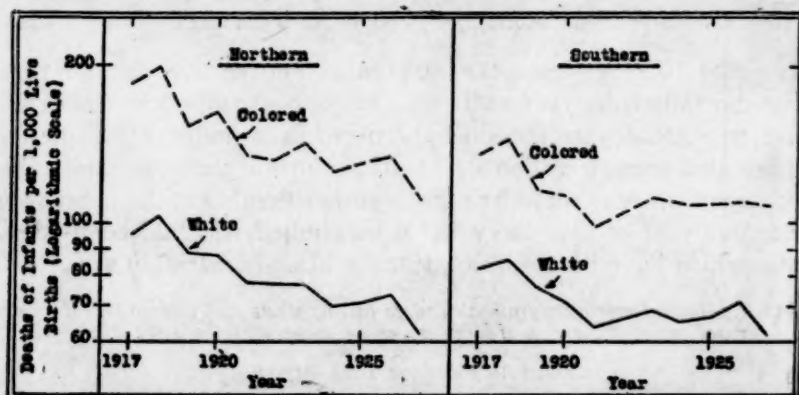


FIGURE 1.—Course of infant mortality among white and colored in certain northern and southern States, 1917-1927 (the States comprising the northern group are Indiana, Michigan, New York, Ohio, Pennsylvania, and Maryland; those of the southern group are Kentucky, North Carolina, and Virginia)

rates showed a decided downward trend in the North, while in the South, after a decline between 1917 and 1921, they remained remarkably constant from year to year. At the end of the period, in 1927, the rates for the colored populations of the northern and southern groups were at practically the same level (112 per 1,000 live births in the North and 108 in the South). The graphs of white infant mortality rates in the northern and southern groups show the same contrast in trend, the northern rates being higher than the southern in 1917, but declining steadily throughout the period, so that in 1927 the rate for both groups was 62 per 1,000 live births.

In 1917 the negro rates were higher in proportion to the white rates in the North than in the South; but the rate of decline being

³ Maryland was placed in the more northern group because the ratio of urban to rural population resembles more closely that of the northern than of the southern States. (In the northern group of States the rural population is only 40 per cent of the total, while in the southern group, it is approximately 85 per cent.) Another reason was that as the population of Baltimore is so much larger than that of other urban areas of the South, conditions in Baltimore rather than in the group as a whole would be reflected by combining it with the southern cities.

more rapid in the North, the proportions were approximately the same in the two sections in 1927.

In the North, the negro rates declined as rapidly as the white rates. In the South, the rates for both races decreased from 1917 to 1921, but have remained at a level since then. There is a greater difference in trend between the rates for the North and the South than between those for the two races.

Figure 2 brings out the differences between urban and rural infant mortality for both races in the North and in the South. In the North, the negro rates for the cities and the rural areas are not very different, but the rural rates are rather consistently higher than the urban, even though the difference is small. Both urban and rural graphs show approximately the same downward slope. The decline in the urban rates has been somewhat less rapid since 1921 than

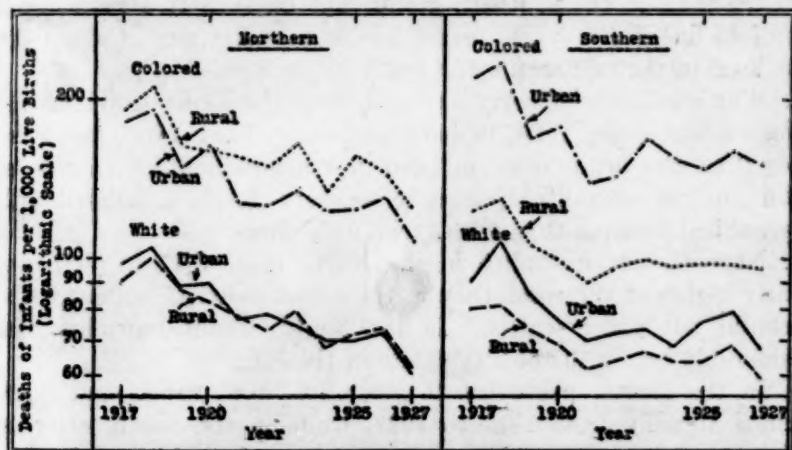


FIGURE 2.—Course of infant mortality among white and colored in urban and rural areas of certain northern and southern States, 1917-1927 (northern group: Indiana, Michigan, New York, Ohio, Pennsylvania, and Maryland. Southern group: Kentucky, North Carolina, and Virginia)

before that year. In the South, on the other hand, negro infant mortality is very much higher in the cities than in the rural areas. The trend of urban and rural infant mortality is practically the same—a sharp drop from 1917 to 1921 with no great change in level thereafter. It may be that gradual improvement in birth registration was in part responsible for the initial drop in the rates, since it seems unlikely that there was some factor operating to lower infant mortality previous to 1921, which has been in abeyance since that year. The rates for negroes in the southern cities are somewhat higher than the rates for the negroes in either urban or rural North, while the southern rural rates are lower.

In both northern and southern groups infant mortality is lower among the white than the colored population. In the North, white rates have downward trends similar to those of the colored population. In contrast to the slightly higher rural rates which occur among the

negroes, white urban and rural rates are practically identical. In the South the white rates have the same initial drop and subsequent level phase shown by the negro rates. Among the white population also, urban rates are higher than rural, but the difference is not so marked as that found among the negroes.

The graphs suggest that, although in both urban and rural areas of the North and South, infant mortality among the negroes is higher than among the white population, the two races are equally affected by general sanitary measures and child-welfare programs. In the North, where these agencies have been operating more actively over a longer period, a steady decrease of infant mortality in both races contrasts with the level sustained since about 1921 by both races in the urban and rural South.

Summary.—1. In 1917 negro infant mortality was higher in the northern than in the southern group; but because of a more rapid rate of decline in the North, negro infant mortality was at about the same level in the two sections in 1927.

2. White infant mortality rates showed the same trend as the corresponding negro rates in both sections. The white rates were lower than the negro rates in both North and South. In rate of decline, infant mortality appears to be more closely associated with geographical location than with racial differences.

3. Negro infant mortality in the North from 1917 to 1927 was slightly higher in the rural than in the urban districts, although the rates did not differ widely. In the South, infant mortality was considerably higher in the cities than in the country.

4. In the North, negro infant mortality, both urban and rural, declined steadily from 1917 to 1927, while in the South, after an initial drop, due presumably to improvement in birth registration, the rates have remained at a level.

5. In the North, urban and rural infant mortality, both negro and white, declined steadily at substantially the same rate from 1917 to 1927, while in the South, the rates for both races remained at a level after 1921. It may be assumed that sanitation and infant-welfare measures, which were instituted earlier and have been more actively carried out in the North, have been the chief factors in the progressive decline of the rates for both races.

The Trend of Infant Mortality in Urban and Rural Maryland from 1906 to 1927

The birth registration area was not established until 1915; consequently, in order to study the trend of infant mortality prior to that year, it is necessary to use rates based upon the population under 1 year rather than upon the number of births recorded. Table 2 contains white and colored infant mortality rates per 1,000 population under 1 year in urban and rural Maryland from 1906 to 1920. The trend lines of these rates (fig. 3) were not carried beyond 1920,

because it was thought inadvisable to use rates based on estimated populations later than the last census, that of 1920. In order to present a more nearly complete picture of the trend of infant mortality in urban and rural Maryland, rates per 1,000 births from 1917 to 1927 are shown in Table 3 and Figure 4.

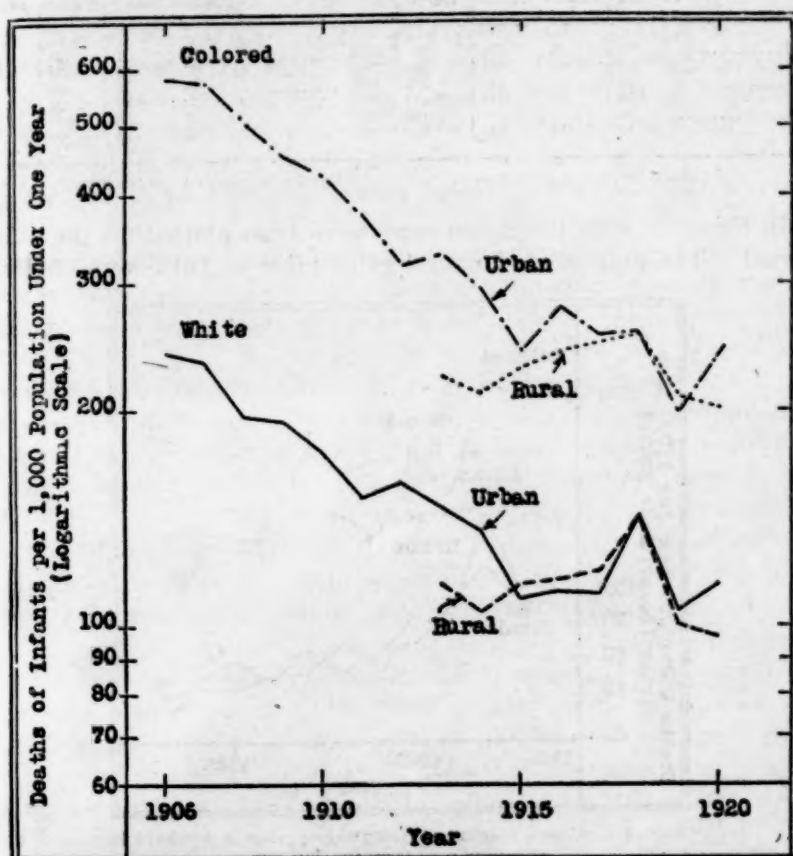


FIGURE 3.—Course of infant mortality among white and colored in urban and rural Maryland, 1906-1920

TABLE 2.—*Infant mortality from all causes among white and colored in urban and rural Maryland from 1906 to 1920*

DEATHS PER 1,000 POPULATION UNDER 1 YEAR

Year	White		Colored		Year	White		Colored	
	Urban ¹	Rural ²	Urban	Rural		Urban ¹	Rural ²	Urban	Rural
1906	240.9	85.6	579.6	127.6	1914	135.7	104.2	296.4	211.1
1907	233.4	88.8	570.6	143.2	1915	103.9	113.8	243.7	229.4
1908	197.5	93.6	505.4	146.8	1916	112.6	116.5	280.1	241.8
1909	193.3	96.8	453.2	161.9	1917	110.9	119.2	254.7	248.2
1910	174.0	98.4	427.1	168.8	1918	142.8	140.9	258.0	250.1
1911	152.8	97.6	373.7	170.6	1919	104.8	100.2	197.1	205.3
1912	158.2	94.1	320.1	165.3	1920	114.1	66.5	239.6	201.8
1913	146.6	114.0	331.1	223.6					

¹ Urban—cities of 10,000 and over.

² Rural—the remainder of the State.

TABLE 3.—*Infant mortality from all causes among white and colored in urban and rural Maryland, 1916-1927*

DEATHS PER 1,000 LIVE BIRTHS

Year	White		Colored		Year	White		Colored	
	Urban ¹	Rural ²	Urban	Rural		Urban ¹	Rural ²	Urban	Rural
1916.....	103	98	220	203	1922.....	85	77	135	157
1917.....	103	99	194	205	1923.....	77	84	139	170
1918.....	135	113	212	217	1924.....	76	75	124	133
1919.....	60	96	143	173	1925.....	73	81	124	109
1920.....	94	85	168	162	1926.....	73	76	128	147
1921.....	80	82	125	165	1927.....	71	64	126	144

¹ Urban=cities of 10,000 and over.² Rural=the remainder of the State.

In Figure 3, only the urban rates have been plotted for the whole period. The graphs of the rural rates prior to 1913 were omitted,

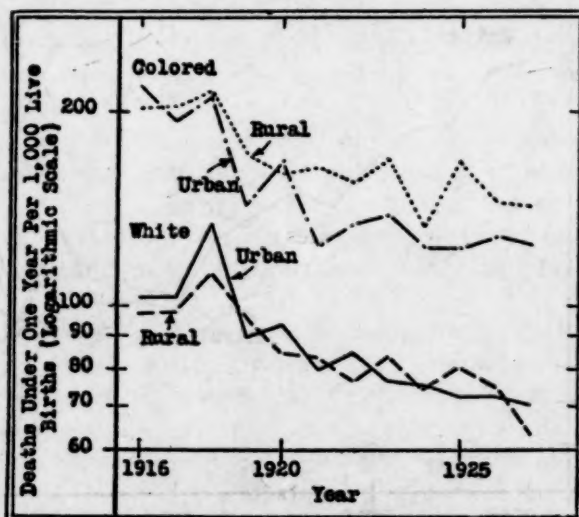


FIGURE 4.—Course of infant mortality among white and colored in urban and rural Maryland, 1916-1927

because from 1906 to 1913 the rates increased progressively, presumably on account of gradual improvement in registration of deaths in the rural areas. At about 1913 the rates reached a level, and it may be assumed that the registration of deaths has been fairly complete since that year.

In the cities, where death registration was enforced at a much earlier period, infant mortality rates declined rapidly from 1906 to 1920. About 1915, urban infant mortality reached the level of the rural rates and from 1916 to 1920, the yearly rates in the two areas were very similar.

The colored rates, both urban and rural, were considerably higher than the white rates throughout the period. The graphs of both urban and rural colored infant mortality parallel those of the cor-

responding white populations, showing a similar rate of decline in both colored and white infant mortality.

Figure 4 shows the rates per 1,000 living births from 1916 to 1927. Among the colored population, both urban and rural, the rates dropped rapidly during the first five years of the period and then continued at a level after 1920 in the cities. The rural rates show a slight trend downward after that year. It is probable that the initial rapid drop is due to improvement in birth registration. Since 1920 the rates have been somewhat lower in urban than in rural Maryland.

White infant mortality rates show a steady decline, being practically the same and decreasing with equal rapidity in urban and rural areas. The white rates are considerably lower than those of the negro population.

Summary.—1. In urban Maryland, negro infant mortality decreased rapidly from 1906 to 1920.

2. Negro infant mortality rates in urban Maryland were higher year for year than the white rates, but the rate of decline was the same for both races.

3. Because of incomplete death registration, the rural rates are not reliable prior to 1913. Between 1913 and 1920, rural rates showed no downward trend for either race.

4. At about 1915 the urban rates reached the level of the rural rates. From 1915 to 1920, urban and rural infant mortality rates did not differ widely.

5. Since 1920, negro infant mortality in the cities has remained at a level. The rural rates show a slight trend downward.

6. Negro infant mortality, both urban and rural, is considerably higher than the urban and rural rates for the white population. The rates for white infants show a consistent decrease year by year, urban and rural infant mortality being practically the same.

The Trend of Infant Mortality in Four Cities

Table 4 and Figures 5, 6, 7, and 8 show the trend of infant mortality per 1,000 population under 1 year in four cities over a period of years ending in 1920. Curves were fitted to the data for these cities by the method of least squares.⁴ In Baltimore and Richmond

⁴ Equations of curves fitted to the course of mortality among white and colored in four cities

City	Equation: y = infant mortality rate; x = time in single years	Origin
Richmond:		
White.....	$\text{Log } y = 2.31261 - 0.01666x + 0.00287x^2 - 0.00005x^3$	1890
Colored.....	$\text{Log } y = 2.66349 - 0.01118x$	1890
Baltimore:		
White.....	$\text{Log } y = 2.26237 + 0.01731x - 0.00268x^2 + 0.00006x^3$	1890
Colored.....	$\text{Log } y = 2.66877 + 0.01310x - 0.00213x^2 + 0.00003x^3$	1890
Charleston:		
White.....	$\text{Log } y = 2.39655 - 0.01376x$	1890
Colored.....	$\text{Log } y = 2.72094 - 0.00339x$	1890
New Orleans:		
White.....	$\text{Log } y = 2.43700 - 0.01684x - 0.00025x^2 + 0.000009x^3$	1890
Colored.....	$\text{Log } y = 2.65995 - 0.00768x - 0.00065x^2 + 0.00002x^3$	1890

colored infant mortality declined more rapidly than the rates for white infants, although in 1920 the colored rates were still considerably higher than the white rates in both cities. In Richmond, among the colored population the rates showed a consistent downward trend from 1890 to 1920. The white rates, on the other hand, between 1898 and 1910 were very irregular, but sustained practically the same level throughout. In Baltimore the rates for the two races

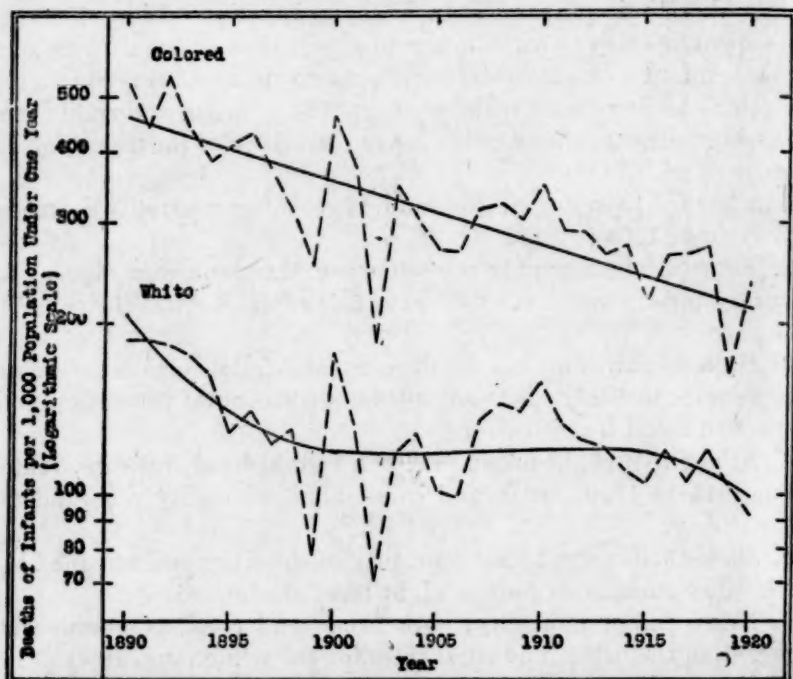


FIGURE 5.—Course of infant mortality among white and colored in Richmond, Va., 1890-1920 (the solid lines were obtained by fitting a third order parabola and a straight line to the logarithms of the annual rates for white and colored, respectively)

showed a similar trend, with the colored rates falling a little more rapidly than the white rates.

In New Orleans and Charleston infant mortality declined more rapidly among the white population than among the negroes. This difference was especially marked in Charleston. The graphs for the two races diverge widely, so that in 1920 the difference between white and colored infant mortality was much greater than in the other three cities.

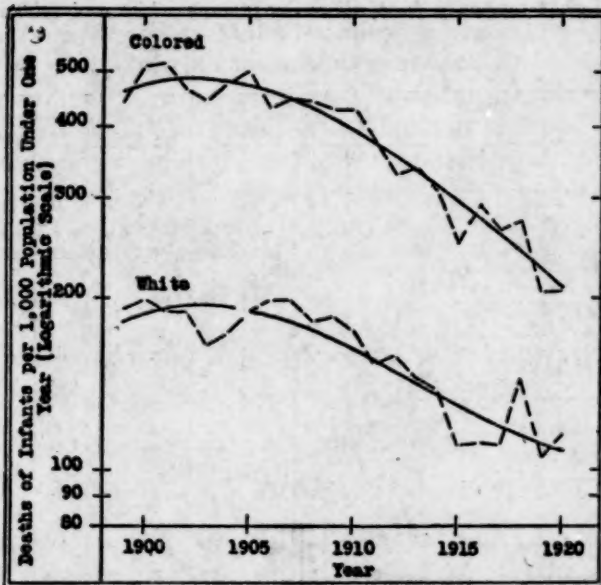


FIGURE 6.—Course of infant mortality among white and colored in Baltimore, Md., 1899-1920 (the solid lines were obtained by fitting third order parabolas to the logarithms of the annual rates for white and colored)

TABLE 4.—*Infant mortality from all causes among white and colored in Baltimore, Md., 1899-1920, Richmond, Va., New Orleans, La., and Charleston, S. C., 1890-1920*

RATE PER 1,000 POPULATION UNDER 1 YEAR

Year	Baltimore		Richmond		New Orleans		Charleston	
	White	Colored	White	Colored	White	Colored	White	Colored
1890			187	530	260	430	231	518
1891			188	442	234	391	237	503
1892			183	545	273	424	242	506
1893			176	441	240	440	211	508
1894			163	388	226	457	179	529
1895			128	415	268	440	204	490
1896			141	434	249	438	223	489
1897			124	369	194	369	171	444
1898			132	311	182	395	178	518
1899			78	251	220	379	204	493
1900	200	513	177	465	169	368	205	509
1901	192	520	133	372	135	289	151	460
1902	191	469	70	185	150	309	172	458
1903	166	448	118	351	142	270	118	467
1904	175	479	129	307	147	270	156	430
1905	191	504	102	271	139	302	155	489
1906	199	434	90	269	140	256	150	509
1907	199	452	135	320	163	301	173	443
1908	183	443	145	323	150	272	141	436
1909	187	430	140	305	131	240	105	457
1910	176	432	158	350	117	281	158	535
1911	153	381	134	292	128	238	139	483
1912	159	352	124	263	91	196	141	495
1913	146	342	122	266	106	249	104	440
1914	139	310	112	276	102	235	123	401
1915	112	252	105	218	105	259	92	444
1916	113	293	120	265	87	214	93	415
1917	112	295	107	267	94	257	92	432
1918	145	275	120	273	116	244	125	415
1919	106	206	104	164	88	190	94	350
1920	116	207	93	236	89	223	107	470

TABLE 5.—*Infant mortality from all causes among white and colored in several cities, 1917-1927*

DEATHS PER 1,000 LIVE BIRTHS

City	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Boston, Mass.:											
White.....	98	113	96	100	77	92	82	74	84	83	76
Colored.....	167	173	115	129	105	90	108	97	118	117	99
Cincinnati, Ohio:											
White.....	81	95	80	76	69	71	73	73	73	83	69
Colored.....	205	229	171	155	125	98	143	124	105	131	99
Columbus, Ohio:											
White.....	85	96	88	90	71	82	70	61	69	70	59
Colored.....	123	153	154	155	166	101	129	101	168	122	97
Indianapolis, Ind.:											
White.....	91	88	76	84	70	69	78	70	63	70	57
Colored.....	139	138	115	150	115	136	142	123	113	123	91
Kansas City, Kans.:											
White.....	101	126	97	100	67	80	88	85	74	78	63
Colored.....	220	230	221	181	105	172	169	170	181	122	158
Louisville, Ky.:											
White.....	87	96	81	73	67	66	82	67	73	83	64
Colored.....	166	251	219	190	117	178	153	99	126	170	80
New York, N. Y.:											
White.....	87	90	79	83	69	73	65	66	62	65	53
Colored.....	176	171	145	157	135	117	116	106	118	131	108
Norfolk, Va.:											
White.....	62	101	79	69	64	53	52	46	59	50	48
Colored.....	193	204	157	155	139	144	170	141	158	152	148
Philadelphia, Pa.:											
White.....	103	116	86	84	75	79	73	68	70	70	58
Colored.....	192	214	146	178	121	135	138	131	128	134	103
Pittsburgh, Pa.:											
White.....	116	136	112	108	94	93	93	86	79	78	68
Colored.....	209	215	135	161	133	144	164	151	102	119	112
Richmond, Va.:											
White.....	94	105	91	81	80	77	75	69	67	76	61
Colored.....	219	236	139	180	142	112	177	124	132	164	113
Washington, D. C.:											
White.....	71	85	67	72	68	64	71	62	67	67	49
Colored.....	160	188	132	139	122	134	143	108	132	123	109
Baltimore, Md.:											
White.....	103	137	89	95	80	84	75	76	72	71	70
Colored.....	197	215	143	165	123	134	136	124	122	128	127
Charleston, S. C.:											
White.....			88	96	79	60	78	89			
Colored.....			293	350	257	200	214	218			

In 1920 infant mortality for the white populations of these four cities was not very different, the values read from the fitted curves all falling between 92 and 110 per 1,000. In Baltimore, Richmond, and New Orleans colored infant mortality rates did not differ widely, falling between 210 and 225 per 1,000. The colored rate for Charleston, however, was about 400 per 1,000.

Since the infant mortality rates plotted in Figures 5, 6, 7, and 8 were based upon the population under one year, it was thought that the unusually high rate among the colored population of Charleston might be due to an underestimation of this population in the census, and therefore the rates per 1,000 living births have been tabled for comparison. Only the rates from 1919 to 1924 were available, since South Carolina was in the birth registration only during this 6-year period.

Table 5 shows the infant mortality rates per 1,000 living births for several cities having populations of 100,000 or more. When the rates for Charleston from 1919 to 1924 are compared with those for other cities, it is evident that infant mortality rates among the white popu-

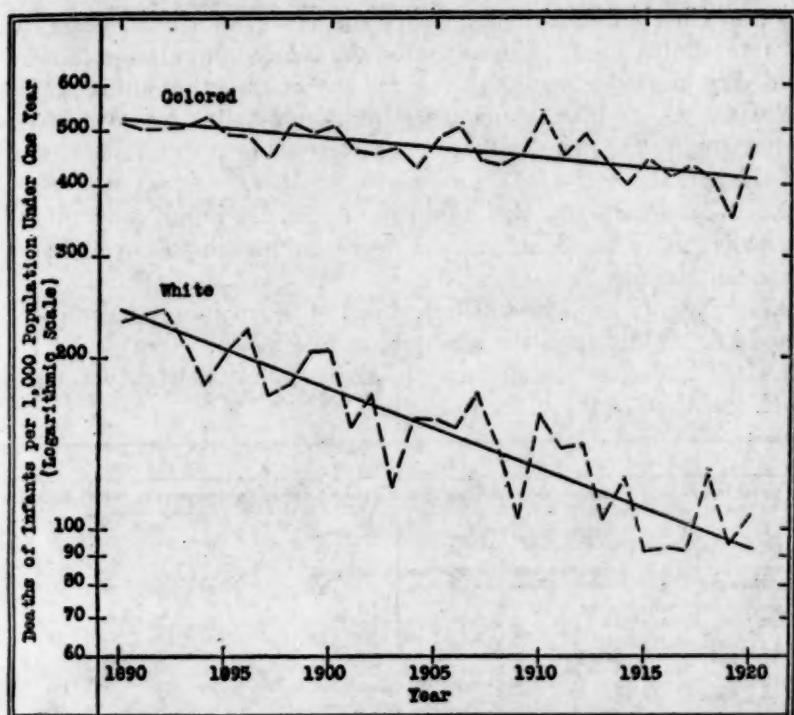


FIGURE 7.—Course of infant mortality among white and colored in Charleston, S. C., 1890-1920 (the solid lines were obtained by fitting straight lines to the logarithms of the annual rates for white and colored)

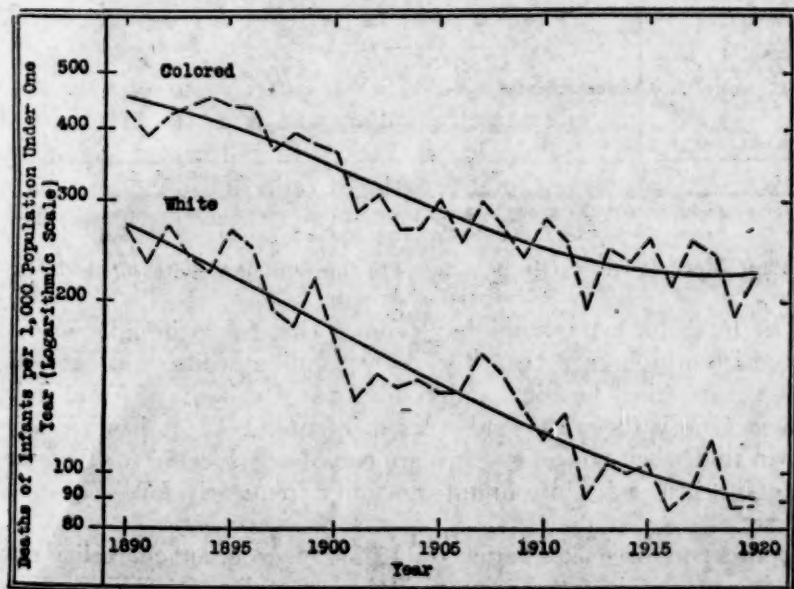


FIGURE 8.—Course of infant mortality among white and colored in New Orleans, La., 1890-1920 (the solid lines were obtained by fitting third order parabolas to the logarithms of the annual rates for white and colored)

lation of Charleston, although above the average for most years, were not remarkably high. The rates for the colored population, however, were very much higher than those for any of the other cities.

Summary.—1. In all four cities infant mortality was considerably higher among the negroes than among the white populations throughout the period.

2. In Baltimore and Richmond the decline in infant mortality was somewhat more rapid among the negro populations than among the white populations.

3. In New Orleans and Charleston the negro infant mortality declined less rapidly than the white infant mortality.

4. In Charleston the decrease in negro infant mortality rates was much less than in the other four cities.

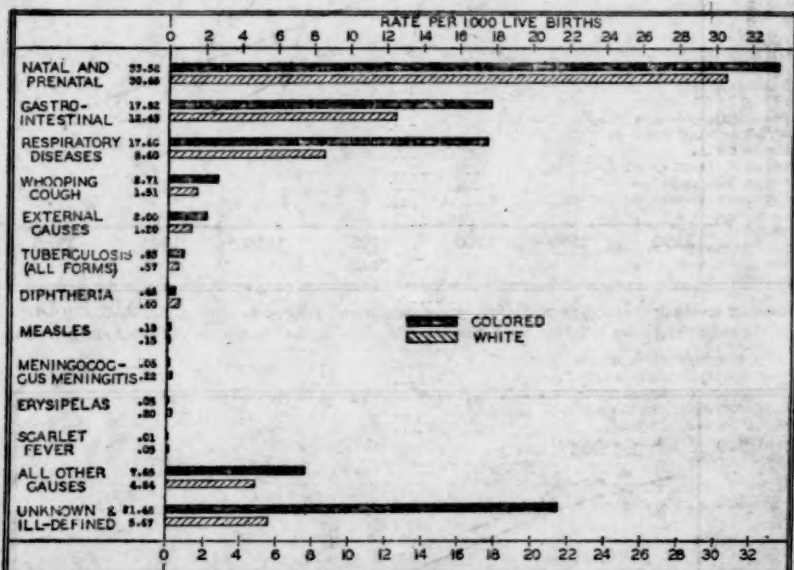


FIGURE 9.—Infant mortality among white and colored in southern States of the birth registration area, 1925 (Kentucky, Maryland, Mississippi, North Carolina, and Virginia)

Infant Mortality from Certain Causes in the Southern States of the Birth Registration Area in 1925

The foregoing paragraphs have shown that negro infant mortality is consistently higher than the corresponding white mortality and that geographical location and conditions of urban and rural living influence both the white and colored infant rates. It has also been shown that when mortality rates are considered specific for these two factors, negro and white infant mortality frequently follow a similar course.

In order to discover whether the higher negro infant mortality rates are due to certain diseases or to higher mortality from every cause, white and colored rates for certain important causes were computed for a group of southern States for 1925. (Table 6, figs. 9 and 10.)

It is evident that the negro rates for separate causes are higher than the corresponding white rates (fig. 9) with very few exceptions. Deaths from unknown and ill-defined diseases are much more numerous among negro than among white infants, otherwise the rates for both races fall into the same order, with the exception of a few causes from which mortality is quite low.

TABLE 6.—*Infant mortality from important causes among white and colored in Southern States of the birth registration area¹ of 1925*

Causes of death	Deaths per 1,000 live births		Ratio of colored to white rate
	White	Colored	
Natal and prenatal diseases (29, 38, 150-163).....	30.65	33.52	1.09
Tetanus (29).....	.07	.29	4.14
Syphilis (38).....	.39	2.15	5.51
Congenital malformations (159).....	4.55	2.16	.47
Congenital debility (160).....	3.57	6.79	1.90
Premature birth (161a).....	17.10	17.25	1.01
Injury at birth (161b).....	3.23	2.26	.70
Other diseases of early infancy (162, 163).....	1.73	2.61	1.51
Gastro-intestinal diseases (16, 111, 112, 113).....	12.49	17.82	1.43
Dysentery (16).....	.87	1.09	1.25
Diseases of the stomach (111, 112).....	.67	1.03	1.61
Diarrhea and enteritis (113).....	10.95	15.66	1.43
Respiratory diseases (11, 99, 101).....	8.60	17.60	2.05
Influenza (11).....	1.85	3.96	2.14
Bronchitis (99).....	.34	.86	2.53
Broncho-pneumonia (100).....	4.54	8.12	1.79
Lobar pneumonia (101).....	1.87	4.66	2.49
Measles (7).....	.15	.18	1.20
Scarlet fever (8).....	.05	.01	.20
Whooping cough (9).....	1.51	2.71	1.79
Diphtheria (10).....	.60	.46	.77
Erysipelas (21).....	.20	.05	.25
Meningococcus meningitis (24).....	.22	.03	.27
All forms of tuberculosis (31-37).....	.57	.83	1.46
Tuberculosis of respiratory system (31).....	.19	.47	2.47
Other forms of tuberculosis (32-37).....	.38	.37	.97
External causes (175-203).....	1.20	2.00	1.67
Unknown or ill-defined diseases.....	5.67	21.48	3.79
All other causes.....	4.84	7.65	1.58

¹ The States included are Kentucky, Maryland, Mississippi, North Carolina, and Virginia.

In Figure 10 the ratios of colored to white rates are shown. The negro rates are higher than the white rates except for four contagious diseases—diphtheria, meningococcus meningitis, erysipelas, and scarlet fever. There is no way of determining whether or not a disproportionate number of deaths from these causes are included in the large group of unknown and ill-defined causes of death among the negroes; but infant deaths as well as deaths at all ages indicate that the infectious diseases do not show as high a rate of mortality among colored as among white infants. The two exceptions to this, among the infectious diseases, are whooping cough and measles, both of which it should be noted, are frequently followed by pneumonia as a complicating cause of death.

Natal and prenatal causes of death, which include such important causes of infant mortality as congenital malformations, congenital debility, premature birth, and injury at birth, are extremely high

among both white and colored infants, 31 and 34 deaths per 1,000 live births, respectively. Figure 10 indicates that these causes of death are only 1.09 times as high among negro infants as among white, a small relative difference compared with that between respiratory causes of death, for example.

Mortality from gastrointestinal diseases among infants is the second highest rate for both white and colored and is only 1.43 times as high among colored as among white infants. In "Mortality among negroes in the United States," Public Health Bulletin No. 174, is reviewed the results of work in Baltimore clinics among white and negro infants. In general, the results showed that among those infants that visited the clinics regularly and had the advantage of advice as to proper feeding, etc., deaths from gastrointestinal diseases were reduced materially among both white and colored, the

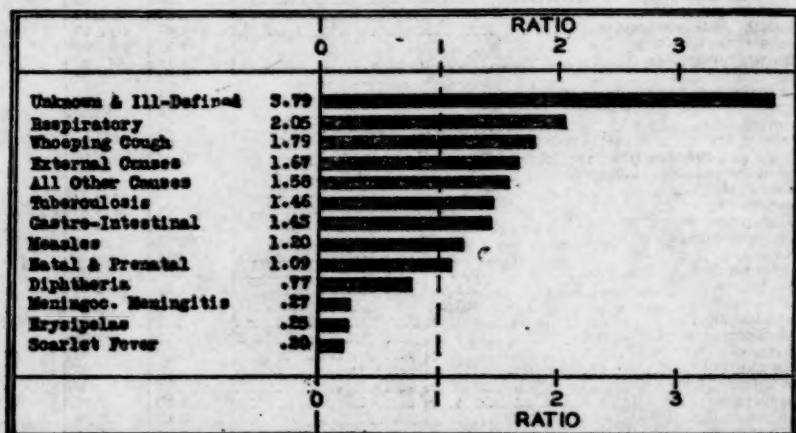


FIGURE 10.—Ratio of colored to white infant mortality in southern States of the birth registration area of the United States, 1925

colored, however, maintaining a lower rate of mortality from gastrointestinal diseases than the white with equal medical supervision. Respiratory diseases, however, still remained about twice as high among colored as among white infants.

Mortality from respiratory diseases is third in order of magnitude among white as well as among colored infants. Among negroes the rate for respiratory diseases is as high as that for gastrointestinal diseases, while among whites the respiratory rate is only about two-thirds of the gastrointestinal. Figure 10 indicates that the respiratory rate is twice as high among negroes as among whites. Whooping cough and measles are both frequently followed by pneumonia and are, as mentioned above, the only infectious diseases which show a higher rate of mortality for colored than for white.

Tuberculosis is not so important a cause of death among infants as at later ages; but even among infants the rate for all forms of tuber-

culosis is higher for colored than for white. Among the white, one-third of the mortality from tuberculosis is pulmonary, while among the colored one-half of the total deaths from tuberculosis are recorded as pulmonary. Among whites the pulmonary tuberculosis rate is 0.19 per 1,000 live births, among the colored it is 0.47. Mortality from all other forms of tuberculosis is 0.38 for whites and 0.37 per 1,000 live births for colored. In other words, tuberculosis other than pulmonary is practically the same for white and colored; whereas pulmonary tuberculosis is a little more than twice as high among colored as among white, a fact which may be associated with the high mortality from pulmonary tuberculosis in adult ages, although there is no evidence given here that the high rate among colored infants is due to contact with the mother who may be tuberculous.

The infectious diseases, including diphtheria, which attacks the upper respiratory tract, are all lower among colored infants than among white, and are relatively unimportant causes of death among infants of both races.

TABLE 7.—*White and colored infant mortality from all causes at successive months of age for Southern States of the birth-registration area of 1925*

Age	Population		Rate per 1,000 ¹		Ratio of colored rate to white rate	Deaths	
	White	Colored	White	Colored		White	Colored
Under 1 month.....	208,383	79,082	35.38	46.03	1.30	7,372	3,639
1 month.....	201,011	75,413	5.89	10.38	1.76	1,183	783
2 months.....	199,828	74,630	4.36	7.74	1.77	871	578
3 months.....	198,957	74,052	3.69	7.56	2.05	734	560
4 months.....	198,223	73,492	3.15	6.63	2.10	625	487
5 months.....	197,598	73,005	2.63	5.77	2.19	519	421
6 months.....	197,079	72,584	2.65	5.52	2.08	522	401
7 months.....	196,557	72,183	2.44	4.61	1.89	479	333
8 months.....	196,078	71,850	2.11	4.41	2.09	414	317
9 months.....	195,664	71,533	2.16	4.54	2.10	422	325
10 months.....	195,242	71,208	2.03	2.77	1.36	396	197
11 months.....	194,846	71,011	1.90	2.96	1.56	371	210

¹ Death rates for "under 1 month" are expressed as deaths per 1,000 live births, the number of deaths occurring under 1 month, at 1 month of age, etc., have been cumulated and subtracted from the number of births in computing successive monthly rates, to approximate rates per 1,000 infants living at the beginning of each month of age.

The large group of unknown and ill-defined causes of death is impossible of analysis and may include relatively more of some causes than of others, among the negroes especially, so that as long as this group remains so large a proportion of the total mortality we are always faced with the possibility that conclusions based on the figures obtainable might be materially altered if so many deaths among the negroes were not classified as of unknown or ill-defined cause.

A comparison between negro and white infant mortality at successive months of age for all causes and for certain important causes is shown in Tables 7 and 8 and Figures 11, 12, and 13. The rates are based on data from the Southern States of the birth registration area of 1925.

In computing the monthly rates an effort was made to approximate deaths per 1,000 infants living at the beginning of each month of age. The following method was employed: In estimating mortality

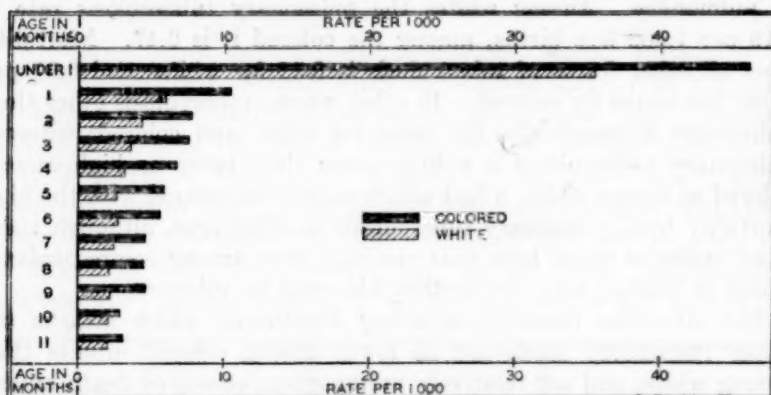


FIGURE 11.—Infant mortality from all causes at successive months of age among white and colored in southern States of the birth registration area, 1925. (Death rates for "under 1 month" are expressed as deaths per 1,000 live births. The number of deaths occurring under 1 month of age, at one month of age, etc., have been added together and then subtracted from the number of births in computing successive monthly rates, in order to approximate rates per 1,000 infants living at the beginning of each month of age)

under 1 month of age, the total number of live births during the year 1925 was divided into the number of deaths under 1 month of age; mortality at 1 month of age is the number of births minus the

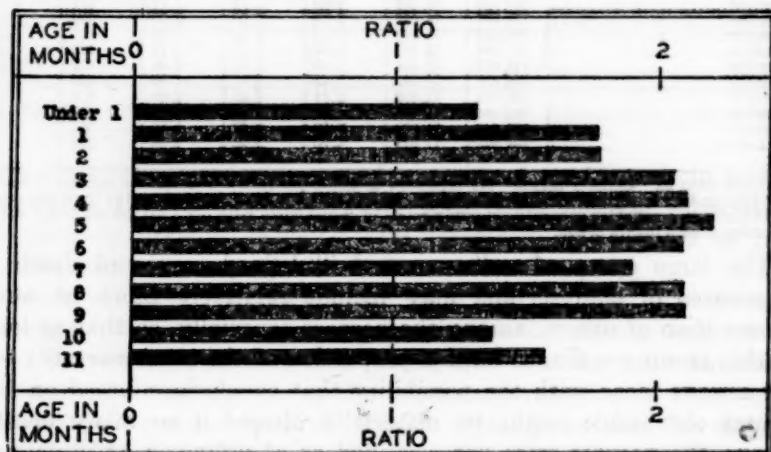


FIGURE 12.—Ratio of colored to white infant mortality from all causes at successive months of age for southern States of the birth registration area, 1925

number of deaths under 1 month divided into the number of deaths at 1 month, and so on, for each successive month of age.

Infant mortality in both races is very much higher in the first month than in any succeeding month. (Fig. 11.) The mortality

rates drop sharply after the first month, and thereafter the rate of decrease lessens gradually. The decrease in infant mortality at successive months of age is more rapid among white than among negro infants. The ratios of negro to white infant mortality month by month is shown in Figure 12. The negro rates are higher at every month of the first year of age, but the excess of negro over white infant deaths is much less during the first than in succeeding months. This excess of negro infant deaths increases gradually to the fifth month, and remains practically the same until the tenth month, when it decreases sharply.

TABLE 8.—*White and colored infant mortality from important causes at successive months of age for Southern States of the birth registration area of 1925*

Age	RATE PER 1,000 *							
	Pneumonia, (all forms)		Diarrhea and enteritis		Congenital debility		Premature birth	
	White	Colored	White	Colored	White	Colored	White	Colored
Under 1 month.....	1.54	1.85	0.65	1.14	2.08	3.47	16.35	16.29
1 month.....	1.05	1.37	1.00	1.49	.43	1.10	.47	.70
2 months.....	.62	1.37	1.23	1.73	.35	.62	.14	.13
3 months.....	.62	1.30	1.24	2.08	.26	.57	.09	.08
4 months.....	.59	1.46	1.29	1.66	.11	.41	.03	.03
5 months.....	.40	1.27	1.12	1.85	.08	.22	.02	.01
6 months.....	.44	1.35	.95	1.46	.09	.23	.01	.04
7 months.....	.52	1.29	.85	1.14	.08	.08	.02	.....
8 months.....	.36	1.06	.83	1.20	.06	.13	.....	.01
9 months.....	.34	1.08	.80	1.33	.05	.07	.....	.....
10 months.....	.34	.39	.81	.86	.03	.06	.....	.....
11 months.....	.29	.63	.73	.93	.03	.07	.....	.....

NUMBER OF DEATHS								
Under 1 month.....	320	146	135	90	434	274	3,408	1,288
1 month.....	211	103	202	112	87	83	95	53
2 months.....	123	102	245	129	70	46	26	10
3 months.....	124	96	246	154	52	42	18	6
4 months.....	99	107	256	122	21	30	5	2
5 months.....	80	93	221	135	16	16	4	1
6 months.....	87	98	188	106	18	17	2	3
7 months.....	103	93	167	82	15	6	4	.....
8 months.....	70	76	163	86	11	9	.....	1
9 months.....	66	77	157	95	10	5	.....	.....
10 months.....	67	42	158	61	5	4	.....	.....
11 months.....	57	45	143	66	5	5	.....	.....

* See footnote to Table 7 for method of computation.

Figure 13 shows mortality from four specific causes at successive months of age for white and colored. Only those causes were selected from which mortality is high enough to make a monthly curve worth presenting. The curve of mortality by months from premature birth, is practically the same for white and colored, extremely high under the first month of age, 16.35 and 16.29 per 1,000 live births for white and colored, respectively. The drop in mortality from this cause is very rapid during the first month of age and continues slowly downward for the succeeding seven or eight months for both races, after which age premature birth amounts to practically nothing as a cause of infant deaths.

Congenital debility (fig. 13) is another cause of death which is relatively very high under the first month of age. The curves for white and colored are not greatly dissimilar; they are both high at

the beginning, show a rapid drop during the first month, and a more gradual decline throughout the remaining months. Relative to the white rate the colored rate is highest at the fourth month rather than under 1 month of age, though the colored rates, especially, are

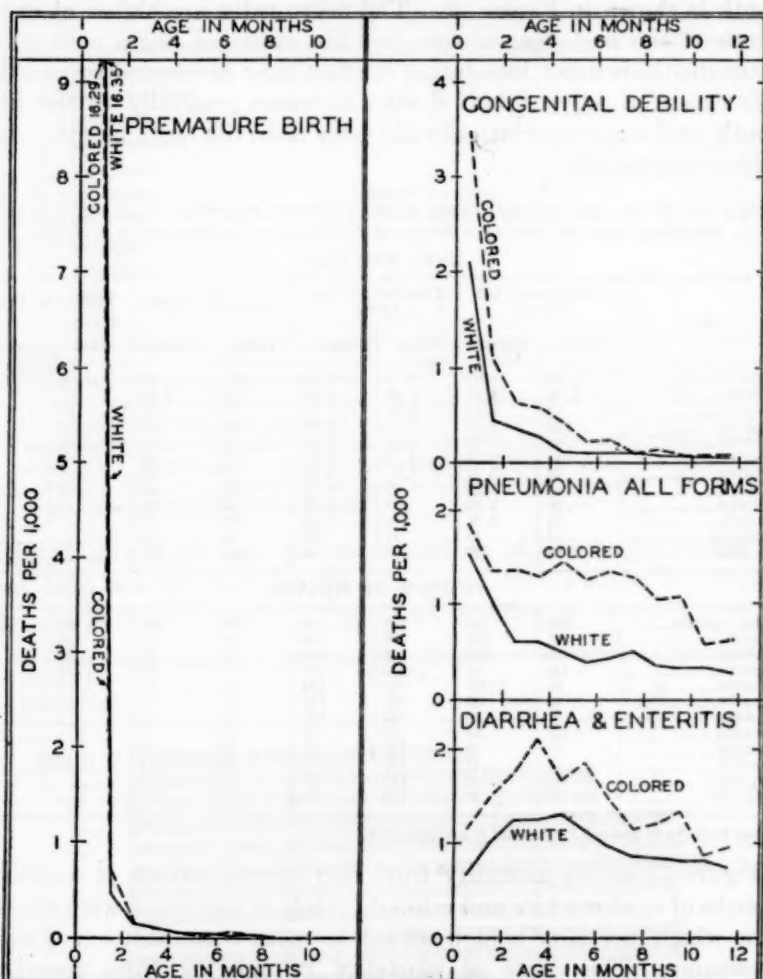


FIGURE 13.—Infant mortality from certain causes at successive months of age in southern States of the birth registration area, 1925 (rates were computed as were those represented in fig. 11)

based on such small numbers during the later months that it is doubtful that this difference is significant.

Mortality from diarrhea and enteritis (fig. 13) rises from birth until about the third or fourth month of age and then declines during the succeeding months. There is not much reason to think that the two curves differ much relatively. Again the rates for the colored population are a little less stable than those of the white, owing to smaller numbers, and what relative differences exist are not marked.

Pneumonia (all forms) (fig. 13) is highest under 1 month of age among both the whites and colored, dropping rapidly among the whites during the first and second months and less rapidly from there on, whereas among the colored the initial drop is during the first month only, followed by a more gradual decline. From approximately the fourth to the eighth month the relative difference between the colored and the white rates is greater than during other months of age, though the curves are on the whole of the same general contour.

Returning to mortality from all causes for separate months, it was shown that it is during the third to ninth month of age rather than during the earlier months that the relative difference between the colored and the white rates are greatest. The study of the cause curves indicates that it is the relative difference in the mortality from pneumonia which occurs at those ages that is largely responsible for the differences between the rates from all causes for white and colored.

Trend of Infant Mortality from Certain Causes

In order to study the trend of infant mortality from certain important causes over a longer period than that for which the number of births were available, rates based on the population under one year were computed for Maryland from 1906 to 1920. (Table 9.) Rates per 1,000 births from 1917 to 1927 are given in Table 10. The trend of infant mortality from diarrhea and enteritis, all forms of tuberculosis, and certain diseases of early infancy are shown in Figure 14.

TABLE 9.—Course of white and colored infant mortality from important causes for Maryland, 1906-1920

Year	Deaths per 1,000 population under 1 year						Number of deaths						Population under 1 year	
	Tuberculosis (all forms)		Diarrhea and enteritis		Certain diseases of early infancy		Tuberculosis (all forms)		Diarrhea and enteritis		Certain diseases of early infancy			
	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
1906.....	2.03	5.38	34.73	39.16	41.23	48.44	44	29	753	211	894	261	21,682	5,388
1907.....	1.55	5.03	40.12	32.54	44.95	61.30	34	27	879	282	985	329	21,911	5,367
1908.....	1.44	3.93	37.90	48.43	39.66	58.04	32	21	839	259	878	311	22,140	5,348
1909.....	1.56	3.94	35.63	42.98	41.62	54.99	35	21	797	229	951	293	22,370	5,328
1910.....	1.33	2.64	35.53	55.91	35.80	53.89	30	14	803	302	809	286	22,600	5,307
1911.....	1.53	5.11	35.35	50.49	39.12	62.78	35	27	807	267	893	332	22,829	5,288
1912.....	1.60	3.04	30.70	47.08	43.93	52.39	37	16	708	248	1,013	276	23,059	5,268
1913.....	1.55	6.86	36.24	54.70	43.20	72.61	36	36	844	287	1,006	381	23,289	5,247
1914.....	1.40	4.40	33.21	49.16	38.01	67.52	33	23	781	257	894	353	23,518	5,228
1915.....	1.26	3.26	29.81	46.27	38.36	58.37	30	17	708	241	911	304	23,748	5,208
1916.....	.96	3.28	32.36	58.98	37.58	61.87	28	17	776	306	901	321	23,978	5,188
1917.....	1.11	3.48	32.72	62.11	36.11	57.27	27	18	792	321	874	296	24,207	5,168
1918.....	1.23	3.50	39.33	65.85	38.75	51.48	30	18	901	339	947	265	24,436	5,148
1919.....	.97	2.53	28.26	44.07	31.09	48.75	24	13	697	226	767	250	24,666	5,128
1920.....	.96	4.89	30.33	48.55	32.13	51.88	24	25	755	248	800	265	24,896	5,108

From 1906 to 1918 there was a gradual increase in negro infant mortality from diarrhea and enteritis. (Fig. 14.) In 1919 the rates began to fall. This drop is shown also by the rates per 1,000 births, which overlap the rates per 1,000 population under 1 year for the period between 1917 and 1920. The rates have continued to decrease from 1918 to 1927, although the rate of decline was somewhat more rapid before than after 1923. White infant mortality from diarrhea and enteritis declined slowly between 1906 and 1920 instead of rising, as did negro infant mortality. In 1918, also, the white rates began to fall, and in 1927 it was much lower than that for any previous year. The decline was somewhat more rapid among the white than among the negro population. Negro rates are higher than white rates throughout the entire period.

Negro infant mortality from all forms of tuberculosis showed no trend in either direction between 1906 and 1920. (Fig. 14.) The rates per 1,000 births showed wide fluctuations and possibly very slight downward trends. The rates for white infants, on the other hand, decreased slowly between 1906 and 1920. Since 1918 they have fallen much more rapidly. The white rates are considerably lower than the rates for negro infants throughout the whole period.

Negro infant deaths from congenital debility, premature birth, and injury at birth showed no decline between 1906 and 1914. Between 1914 and 1920 there was a slight downward trend. The graphs based on births, after a short initial drop from 1917 to 1919, showed no decline. White infant mortality, on the other hand, declined slowly between 1906 and 1920, and this decrease continued at practically the same rate from 1917 to 1927. Negro infant mortality from these causes is higher than that among white infants.

TABLE 10.—Course of white and colored infant mortality from important causes for Maryland, 1917-1927

Year	Deaths per 1,000 births						Number of deaths						Number of live births	
	Tuberculo- sis (all forms)		Diarrhea and enteritis		Certain dis- eases of early infancy		Tuberculo- sis (all forms)		Diarrhea and enteritis		Certain dis- eases of early infancy			
	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
1917.....	0.98	2.79	28.78	49.81	31.76	45.93	27	18	792	321	874	296	27,519	6,444
1918.....	1.07	2.93	34.37	55.09	33.87	43.07	30	18	961	339	947	265	27,960	6,153
1919.....	.87	1.99	25.39	34.64	27.94	38.32	24	13	697	226	767	230	27,448	6,524
1920.....	.81	3.70	25.63	36.69	27.16	39.20	24	25	755	248	800	265	29,452	6,760
1921.....	.63	1.55	19.17	30.65	26.83	38.14	19	11	573	217	802	270	29,892	7,079
1922.....	.90	3.16	18.55	34.31	26.91	36.71	25	21	517	228	750	244	27,865	6,646
1923.....	.54	2.47	14.92	29.69	24.81	34.93	15	17	415	204	690	240	27,809	6,870
1924.....	.94	2.47	13.55	21.75	26.43	37.27	26	17	376	150	733	257	27,738	6,896
1925.....	.81	2.08	16.92	28.04	24.48	38.43	22	14	459	189	664	259	27,124	6,740
1926.....	.69	1.79	12.35	24.72	25.85	36.63	18	12	323	166	676	246	26,151	6,716
1927.....	.31	2.60	9.98	21.25	23.27	38.68	8	17	259	139	604	253	25,954	6,541

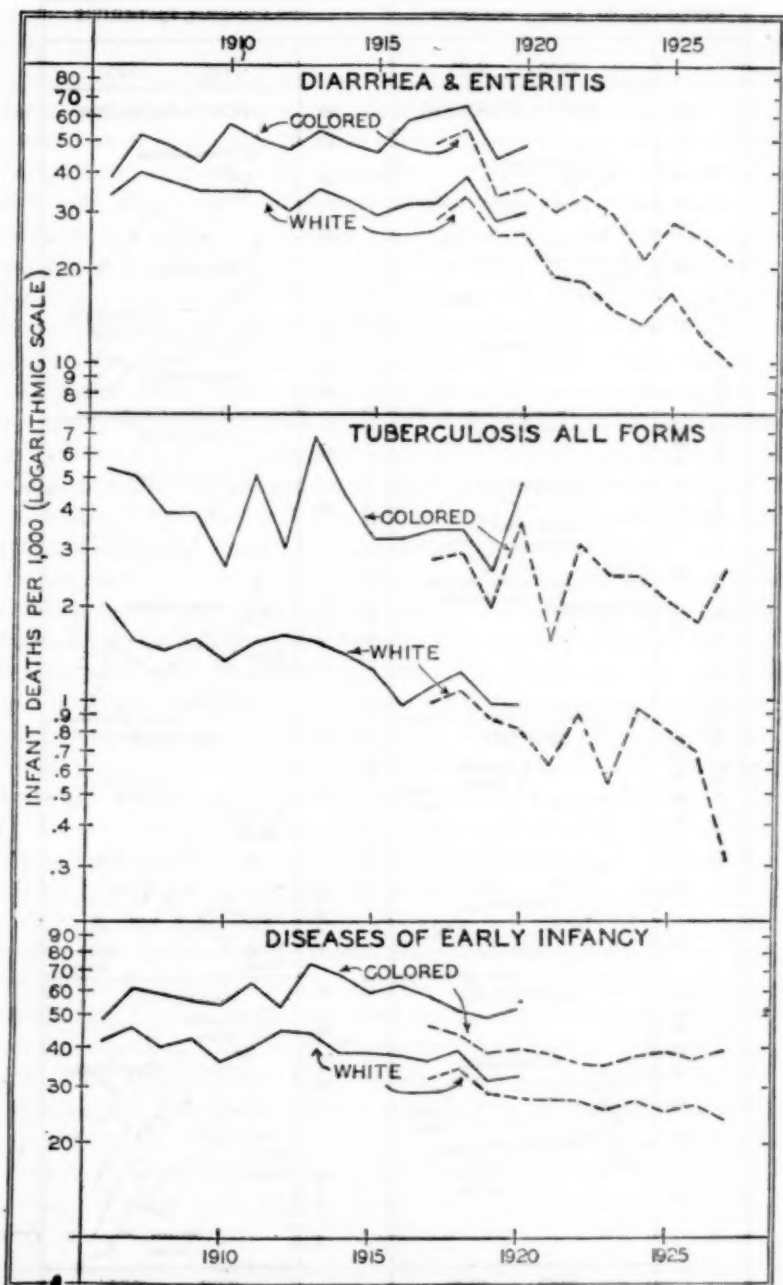


FIGURE 14.—Course of infant mortality from certain causes among white and colored in Maryland, 1906-1927 (solid line represents deaths per 1,000 population under 1 year of age; broken line, deaths per 1,000 live births)

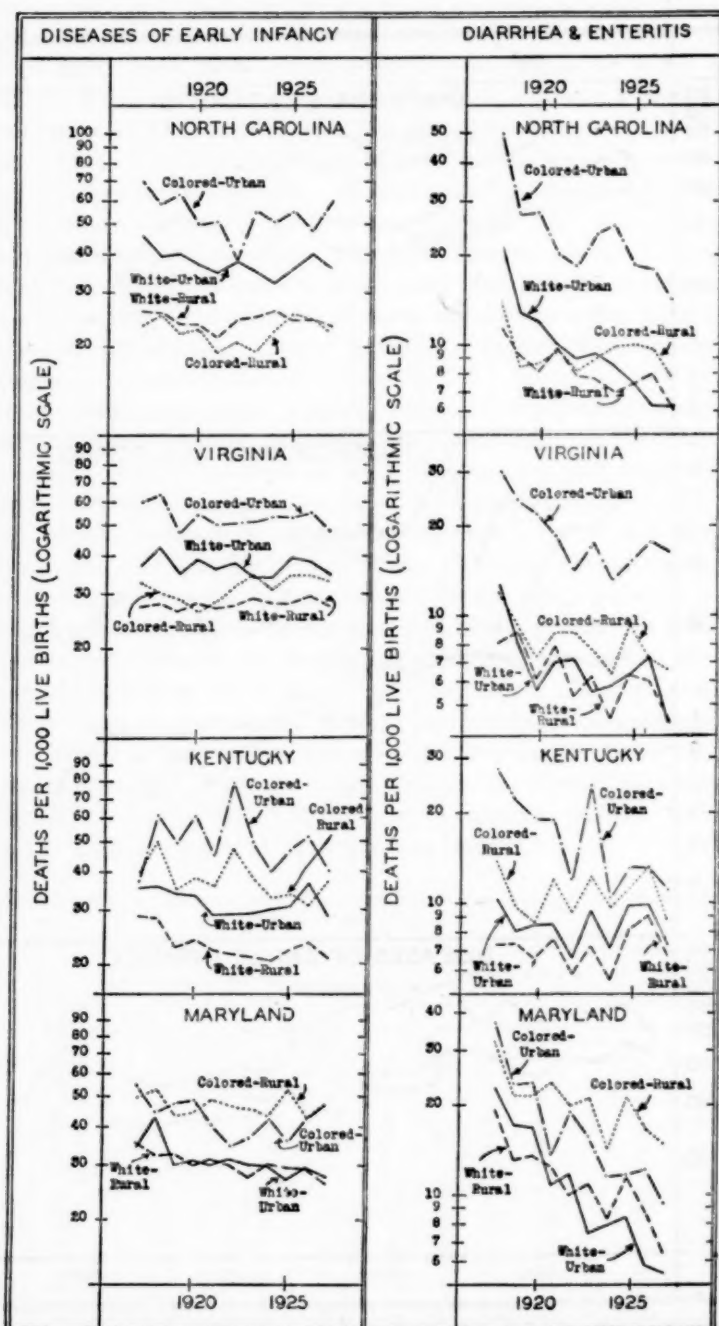


FIGURE 15.—Course of mortality from diarrhea and enteritis (under 2 years), and diseases of early infancy among white and colored of urban and rural areas of four States, 1917-1927

Infant mortality rates among the negro and white populations of the urban and rural sections of four States from 1917 to 1927 are shown in Table 11 and Figure 15. In Kentucky and Maryland, negro infant mortality, both urban and rural, from diseases of early infancy was higher than white infant mortality from the same cause, except that in Kentucky in 1926 the white urban rate rose above the rate for rural negroes. In Kentucky, for both races rural rates are lower and show more downward trend than the urban rates. In Maryland urban and rural rates are at practically the same level and show the same rate of decline except the negro rural rates which are falling less rapidly than the other three. In North Carolina and Virginia urban are higher than rural rates for both races. In North Carolina the negro urban are considerably higher than the white urban rates, while in the rural area the rates for the two races are very nearly the same, the white rates being somewhat higher than the negro rates during most of the period. Both urban graphs show some decline, but the rural rates have remained at about the same level. In Virginia the negro rates are higher than the corresponding rates for white infants. None of the graphs show much decline.

Infant mortality from diarrhea and enteritis (Table 12 and fig. 15) in these States is based on the annual deaths of children under 2 years of age in a particular year and the number of births recorded for that year and the preceding year. In Kentucky, the rates for negro children are higher than those for white children. Urban are higher than rural rates for both races. Only the negro urban rates show a marked decline. In Maryland, also, negro rates are higher than white rates. Among the negro population, except during the first three years, rural rates are higher than urban. Although the rates in both areas declined steadily from 1918 to 1927, urban rates have fallen much more rapidly than the rural. White infant mortality, both urban and rural, from diarrhea and enteritis very nearly parallels the corresponding negro graphs, although the white rates have declined somewhat more rapidly. In both North Carolina and Virginia negro urban rates are very much higher than those of the other three groups. In North Carolina urban rates, both white and negro, from these causes have fallen much more rapidly than the rural rates, so that from 1925 to 1927 white urban rates were well below the negro rural and as low as the white rural rates, although in 1918 they were very much higher than either rural rate. Urban rates have decline more rapidly than rural and the white rates more rapidly than the negro. The trends in Virginia were very similar to those in North Carolina, except that on the whole the decrease in the urban rates was much less rapid in Virginia.

TABLE 11.—*Infant mortality from diseases of early infancy among white and colored in urban and rural areas of four States, 1917-1927*

Year	Kentucky				Maryland				North Carolina				Virginia			
	Urban		Rural		Urban		Rural		Urban		Rural		Urban		Rural	
	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
1917	35.96	37.73	28.81	40.21	34.93	54.71	35.37	49.49	45.07	68.84	25.47	23.07	37.15	59.53	26.68	32.53
1918	36.57	61.97	28.17	50.29	42.61	43.98	32.19	52.36	39.09	57.97	25.21	24.76	41.98	63.35	27.30	30.10
1919	34.36	50.12	22.82	35.70	30.15	47.20	32.80	43.17	39.76	62.42	23.21	21.86	35.03	46.41	25.78	28.29
1920	33.99	62.37	23.78	38.93	31.19	48.53	29.79	43.96	36.07	48.97	23.16	22.42	38.95	53.93	27.34	25.81
1921	29.02	44.83	22.13	36.44	29.95	40.24	31.07	48.38	34.83	50.38	21.33	19.03	36.14	49.74	26.30	27.81
1922	29.31	80.11	21.33	47.46	31.24	34.93	29.38	45.88	37.68	37.73	23.95	20.38	37.65	50.42	26.80	31.58
1923	29.51	50.56	21.14	39.20	30.05	37.22	26.92	45.09	35.01	55.16	24.46	19.11	33.99	50.99	24.63	31.49
1924	30.35	40.20	20.42	33.41	29.66	41.09	50.25	42.98	31.98	50.16	25.65	22.32	34.14	52.47	27.35	30.76
1925	30.97	47.32	22.19	34.59	26.60	36.01	29.52	47.35	89.54	64.24	00.24	97.39	00.52	42.57	25.34	26
1926	37.17	52.50	23.19	31.13	29.17	41.81	28.92	49.39	88.46	93.24	08.21	14.38	00.54	14.28	99.34	34
1927	28.81	40.73	20.91	37.86	27.19	46.26	25.57	46.40	35.79	58.93	23.06	21.97	34.65	46.73	26.71	32.81

NUMBER OF DEATHS

1917	247	361,452	140	496	137	471	195	135	110	1,270	504	278	217	919	494
1918	265	511,440	158	613	106	437	196	115	84	1,242	543	343	233	968	474
1919	225	431,075	115	493	133	364	160	125	98	1,130	447	300	197	853	421
1920	276	581,294	125	549	147	353	164	229	131	1,178	486	370	246	977	413
1921	253	461,300	123	525	125	384	191	230	151	1,168	459	351	277	1,021	467
1922	255	581,082	117	510	105	339	167	217	111	1,192	461	343	221	982	498
1923	254	541,091	96	493	122	367	162	257	185	1,230	436	319	231	1,068	520
1924	303	491,068	108	478	142	350	150	267	183	1,332	527	317	239	959	462
1925	313	691,067	106	421	124	331	173	304	206	1,181	556	338	235	920	460
1926	377	641,074	91	445	145	315	138	344	172	1,155	539	329	252	918	453
1927	298	511,092	106	408	162	280	141	318	227	1,124	480	297	196	863	430

TABLE 12.—*Mortality of children under 2 years of age, from diarrhea and enteritis, among white and colored in urban and rural areas of four States, 1918-1927*

DEATHS UNDER 2 YEARS PER 1,000 LIVE BIRTHS IN THE SAME AND THE PRECEDING YEAR

Year	Kentucky				Maryland				North Carolina				Virginia			
	Urban		Rural		Urban		Rural		Urban		Rural		Urban		Rural	
	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
1918	10.41	28.14	7.41	13.89	22.77	37.24	19.41	32.15	21.56	49.23	11.29	13.73	12.71	30.18	8.15	11.67
1919	8.91	22.01	7.48	9.90	17.21	23.14	13.21	21.48	12.82	26.83	9.09	8.52	8.12	23.85	8.84	9.30
1920	8.59	19.57	6.71	8.71	16.93	23.43	13.64	21.38	11.99	27.33	8.09	8.66	5.70	21.80	6.17	7.38
1921	8.61	19.44	7.74	12.30	10.84	13.64	12.31	23.18	10.08	20.27	9.70	9.61	7.13	18.44	7.95	8.85
1922	6.72	12.01	5.89	9.42	11.67	18.90	9.96	19.90	8.97	18.52	7.89	8.22	7.23	14.10	5.38	8.86
1923	9.55	24.55	7.30	12.41	7.49	15.28	10.85	20.88	9.35	23.19	7.66	9.05	5.57	17.72	6.39	7.68
1924	7.24	10.49	5.68	9.83	7.92	11.52	8.27	14.26	8.54	24.85	6.95	9.91	5.84	13.23	4.54	6.48
1925	9.95	13.27	8.28	11.28	8.41	11.68	11.46	21.22	7.49	18.74	7.39	10.03	6.47	15.27	6.52	9.34
1926	10.07	13.27	9.15	13.33	5.79	12.15	8.74	16.65	6.32	18.02	7.93	9.70	7.34	17.79	6.13	7.27
1927	7.42	11.33	6.79	8.91	5.45	9.18	6.41	14.79	6.34	14.10	6.13	7.88	4.41	16.63	4.66	6.73

NUMBER OF DEATHS UNDER 2 YEARS OF AGE

1918	147	50	752	92	651	183	522	247	128	150	1,118	601	199	221	570	361
1919	113	37	735	63	529	121	326	160	78	81	890	361	136	189	606	285
1920	126	35	656	56	575	137	313	159	112	116	805	365	103	192	425	226
1921	145	38	812	81	381	84	298	178	129	115	1,024	440	137	172	593	291
1922	117	21	615	55	395	116	238	151	118	110	825	384	136	129	400	289
1923	175	44	743	61	245	96	249	151	130	146	769	411	103	159	452	237
1924	142	24	590	55	258	77	190	101	134	174	713	460	109	121	321	195
1925	200	33	839	71	269	80	262	144	126	139	747	460	116	138	451	274
1926	204	33	872	81	180	84	191	109	108	134	771	429	127	156	401	200
1927	152	28	640	51	165	64	140	93	111	106	593	345	76	141	298	177

A comparison between negro and white infant mortality from diarrhea and enteritis in the urban and rural areas of six Southern States is shown in Table 13 and Figure 16. The colored rates are higher than the corresponding white rates in the urban and rural sections of all six States. Urban rates are higher than rural except

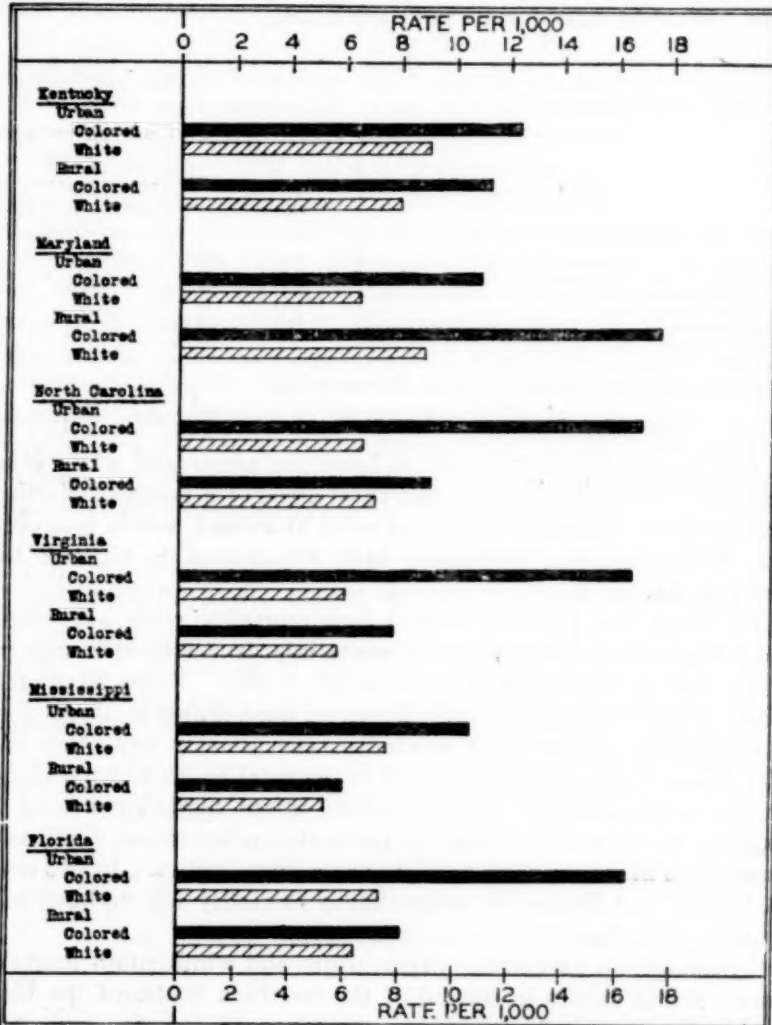


FIGURE 16.—Mortality in children under 2 years of age from diarrhea and enteritis among white and colored in urban and rural areas of six States, 1925-1927 (averages of annual rates computed as deaths under 2 years of age per 1,000 live births during the current and the preceding year)

in Maryland, where the rural rates are considerably higher, and among the white population of North Carolina, where the rural rates are slightly higher than the urban. The highest rate occurs among the negroes of rural Maryland, but this is not much greater than negro urban rates for North Carolina, Virginia, and Florida. Negro

urban rates in the other three States are much lower. The lowest negro urban rate occurs in Mississippi. The white rates do not vary as much as the colored. The urban rates are about the same except the rate for Kentucky, which is somewhat higher than the others. White rural rates, except in Maryland and North Carolina, are lower than the urban rates and do not vary much.

TABLE 13.—Average mortality rate* from diarrhea and enteritis, 1925-1927, in children under 2 years of age among white and colored in urban and rural areas of six Southern States

State	Urban		Rural	
	White	Colored	White	Colored
Kentucky.....	9.13	12.40	8.09	11.28
Maryland.....	6.59	11.00	8.92	17.58
North Carolina.....	6.71	16.90	7.16	9.21
Virginia.....	6.95	16.55	5.79	7.83
Mississippi.....	7.39	10.00	5.33	6.00
Florida.....	7.40	16.34	6.44	8.11

* Rate per 1,000 living births for each year and the preceding year.

Summary

The first part of this study is based on negro and white infant mortality rates in the urban and rural areas of a group of Northern and Southern States, in urban and rural Maryland, and in four cities, viz, Richmond, Va., Baltimore, Md., Charleston, S. C., and New Orleans, La.

In every area studied, negro infant mortality rates were higher than the corresponding rates for white infants. This difference was most marked in the urban areas of the South. Negro infant mortality rates in the rural South, however, were nearer to those of the corresponding white infant mortality rates than in any other area. The lowest negro rates were found in the rural South and the highest in the southern cities. On the whole, infant mortality among the negroes shows trends similar to those shown by infant death rates among the white populations of the same communities. In two cities, Baltimore and Richmond, negro infant mortality has declined more rapidly than that of the white population.

In the second part of the paper, negro and white infant mortality from various causes in several of the Southern States of the birth-registration area is discussed.

Negro infant death rates are higher than the rates for white infants for every cause except four contagious diseases. The greatest excess of negro over white infant deaths was due to unknown and ill-defined diseases. Deaths from respiratory diseases, all forms of tuberculosis, and gastrointestinal diseases were considerably more frequent among negro than among white infants. Mortality among infants of both races is extremely high during the first month of life; white rates fall

rapidly during successive months; negro rates also decrease, but the decline is not so sharp. The ratio of negro to white infant deaths is highest between the fifth and the tenth month. The excessively high rates which occur in both races during the first month are due for the most part to premature birth and congenital debility. Negro and white infant mortality from these causes are very much alike. The principal cause of the excess of negro over white infant deaths from the second to the tenth month is pneumonia. Deaths from diarrhea and enteritis are considerably more numerous among the negroes than among the whites.

Infant mortality from diarrhea and enteritis is on the decrease among both races in Maryland. The reduction in the number of deaths from this cause has been much more rapid during the past 10 years than before 1920. White rates fell somewhat more rapidly than negro. In Maryland, infant death rates from all forms of tuberculosis are considerably higher among the negro than among white infants. The rates have declined much more rapidly among the white population. There is little improvement in the rates from diseases of early infancy in either race. There has been, on the whole, more reduction in the death rate from diarrhea and enteritis in urban than in rural areas. In the six Southern States studied, urban rates are higher than rural, except in Maryland.

DEATHS DURING WEEK ENDED OCTOBER 26, 1929

Summary of information received by telegraph from industrial insurance companies for the week ended October 26, 1929, and corresponding week of 1928. (From the Weekly Health Index, October 30, 1929, issued by the Bureau of the Census, Department of Commerce)

	Week ended Oct. 26, 1929	Corresponding week, 1928
Policies in force	74, 968, 195	72, 054, 672
Number of death claims	13, 305	13, 763
Death claims per 1,000 policies in force, annual rate.	9.3	10.0

Deaths from all causes in certain large cities of the United States during the week ended October 26, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, October 30, 1929, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Oct. 26, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended Oct. 26, 1929 ¹
	Total deaths	Death rate ¹		Week ended Oct. 26, 1929	Corresponding week, 1928	
Total (62 cities).....	6,792	12.2	11.0	649	674	8.59
Akron.....	42			6	9	62
Albany.....	38	16.5	12.2	4	3	79
Atlanta.....	47	9.6	12.1	1	8	10
White.....	23			1	4	
Colored.....	24	(²)	(²)	0	4	
Baltimore.....	205	12.9	11.3	18	22	58
White.....	154			11	18	44
Colored.....	51	(²)	(²)	7	4	111
Birmingham.....	69	16.2	12.5	12	4	100
White.....	36			8	1	120
Colored.....	33	(²)	(²)	4	3	92
Boston.....	191	12.5	12.3	26	21	72
Bridgeport.....	27			3	1	52
Buffalo.....	147	13.8	13.4	10	6	43
Cambridge.....	26	10.8	10.4	1	2	18
Camden.....	36	13.9	7.3	8	1	138
Canton.....	26	11.6	9.0	2	5	47
Chicago.....	657	10.0	10.4	50	62	45
Cincinnati.....	140			17	18	99
Cleveland.....	179	9.3	8.2	14	20	41
Columbus.....	91	15.9	11.0	13	16	122
Dallas.....	39	9.4	9.8	5	8	
White.....	35			5	6	
Colored.....	4	(²)	(²)	0	2	
Dayton.....	34	9.6	10.2	6	3	95
Denver.....	75	13.3	14.6	8	6	77
Des Moines.....	28	9.6	8.3	0	0	0
Detroit.....	309	11.7	10.2	39	56	63
Duluth.....	23	10.3	6.7	4	1	97
Erie.....	15			2	2	41
Fall River.....	10	7.4	6.2	2	1	38
Flint.....	21	7.4	8.1	4	7	49
Fort Worth.....	27	8.3	11.6	4	7	
White.....	23			4	6	
Colored.....	4	(²)	(²)	0	1	
Grand Rapids.....	24	7.6	12.4	2	4	30
Houston.....	48			4	12	
White.....	27			1	12	
Colored.....	21	(²)	(²)	3	0	
Indianapolis.....	89	12.2	10.7	5	6	40
White.....	75			4	4	37
Colored.....	14	(²)	(²)	1	2	60
Jersey City.....	78	12.6	9.8	7	7	54
Kansas City, Kans.....	17	7.5	10.2	0	0	0
White.....	12			0	0	0
Colored.....	5	(²)	(²)	0	0	0
Knoxville.....	30	14.9	8.4	3	1	66
White.....	30			3	1	73
Colored.....	0	(²)	(²)	0	0	0
Los Angeles.....	227			17	22	50
Louisville.....	84	13.3	12.9	8	14	65
White.....	66			6	10	56
Colored.....	18	(²)	(²)	2	4	126
Lowell.....	26			2	6	45
Lynn.....	19	9.4	12.9	1	7	27
Memphis.....	67	18.4	14.3	12	6	141
White.....	38			7	3	132
Colored.....	29	(²)	(²)	5	3	156
Milwaukee.....	105	10.1	9.7	9	12	40
Minneapolis.....	72	8.3	9.5	7	5	43
Nashville.....	50	18.7	11.6	6	3	97
White.....	31			3	3	65
Colored.....	19	(²)	(²)	3	0	189
New Bedford.....	18			1	2	21
New Haven.....	54	15.0	7.5	2	7	31
New Orleans.....	151	18.4	14.6	10	16	50
White.....	87			6	8	42
Colored.....	64	(²)	(²)	4	8	67

See footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended October 26, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928—Continued

City	Week ended Oct. 26, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended Oct. 26, 1929
	Total deaths	Death rate		Week ended Oct. 26, 1929	Corresponding week, 1928	
New York	1,497	13.0	11.0	142	130	58
Bronx Borough	204	11.2	9.2	20	8	59
Brooklyn Borough	506	11.5	9.0	57	50	54
Manhattan Borough	607	18.1	16.2	53	58	65
Queens Borough	136	8.3	7.2	9	14	37
Richmond Borough	44	15.3	14.9	3	0	54
Newark, N. J.	93	10.3	9.9	11	12	54
Oklahoma City	39			4	3	80
Omaha	58	13.6	9.6	6	3	70
Paterson	38	13.7	11.5	5	2	88
Philadelphia	464	11.8	11.3	38	36	54
Pittsburgh	168	13.0	13.1	23	17	70
Portland, Oreg.	68			4	1	46
Providence	64	11.7	10.2	2	5	18
Richmond	40	10.8	15.1	7	7	98
White	30			6	2	127
Colored	10	(¹)	(¹)	1	5	41
Rochester	76	12.1	9.7	5	8	42
St. Louis	248	15.3	12.5	30	25	101
St. Paul	50			6	3	62
Salt Lake City	36	13.6	13.3	3	1	46
San Antonio	68	16.3	13.2	5	13	
San Diego	33			2	0	38
San Francisco	145	13.0	13.4	7	5	45
Schenectady	19	10.6	10.6	2	2	64
Seattle	73	10.0	10.8	1	8	11
Somerville	15	7.6	9.7	1	0	36
Spokane	33	15.8	10.1	2	0	52
Springfield, Mass.	37	12.9	11.5	7	6	116
Syracuse	50	13.1	10.0	8	6	96
Tacoma	28	13.2	10.4	1	1	26
Toledo	90	15.0	11.7	14	8	131
Trenton	39	14.7	12.8	5	2	91
Utica	24	12.0	11.5	1	1	25
Washington, D. C.	135	12.8	12.2	5	13	29
White	86			2	6	17
Colored	49	(²)	(²)	3	7	57
Waterbury	16			3	1	76
Wilmington, Del.	30	12.2	8.1	5	1	130
Worcester	37	9.8	11.1	2	5	25
Yonkers	24	10.3	10.3	4	4	93
Youngstown	36	10.8	8.7	4	6	57

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.

³ Data for 71 cities.

⁴ Deaths for week ended Friday.

⁵ In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department State or local can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended October 26, 1929, and October 27, 1928

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended October 26, 1929, and October 27, 1928

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928
New England States:								
Maine.....	2	4	1	3	27	71	0	0
New Hampshire.....	3	1	7	8	24	38	1	0
Vermont.....	1	6	—	—	—	3	0	0
Massachusetts.....	131	115	1	7	125	199	3	2
Rhode Island.....	13	12	3	—	—	22	0	0
Connecticut.....	24	18	3	3	2	48	1	0
Middle Atlantic States:								
New York.....	121	149	17	11	120	224	15	27
New Jersey.....	116	111	2	5	15	62	5	6
Pennsylvania.....	176	193	—	—	238	319	5	5
East North Central States:								
Ohio.....	98	103	16	10	136	125	3	10
Indiana.....	27	79	—	9	18	12	0	0
Illinois.....	234	187	11	11	112	92	3	4
Michigan.....	121	202	1	—	127	29	21	15
Wisconsin.....	22	30	6	28	182	90	3	5
West North Central States:								
Minnesota.....	41	48	—	3	21	20	0	1
Iowa.....	15	15	—	—	71	—	0	0
Missouri.....	64	59	6	10	13	13	4	3
North Dakota.....	11	14	—	—	18	5	3	1
South Dakota.....	6	4	—	—	—	1	2	0
Nebraska.....	23	26	—	4	22	12	0	1
Kansas.....	31	41	—	1	17	7	0	1
South Atlantic States:								
Delaware.....	2	2	—	—	—	1	0	0
Maryland.....	21	35	17	9	4	36	1	1
District of Columbia.....	9	35	2	—	1	—	0	0
Virginia.....	—	—	—	—	—	—	—	—
West Virginia.....	39	39	14	11	11	10	1	0
North Carolina.....	278	238	4	—	2	20	2	0
South Carolina.....	68	70	—	533	—	—	0	0
Georgia.....	44	37	45	78	3	8	2	0
Florida.....	19	5	4	1	1	—	0	0
East South Central States:								
Kentucky.....	30	37	—	—	—	—	0	0
Tennessee.....	46	67	61	27	20	6	1	1
Alabama.....	88	101	36	60	11	7	3	1
Mississippi.....	103	47	—	—	—	—	1	0
West South Central States:								
Arkansas.....	24	23	19	33	1	—	0	0
Louisiana.....	50	34	6	10	1	9	0	0
Oklahoma.....	65	92	29	25	17	4	0	1
Texas.....	98	69	21	47	4	5	0	0
Mountain States:								
Montana.....	1	4	—	—	68	19	2	0
Idaho.....	—	1	—	—	2	—	4	1
Wyoming.....	—	2	1	—	—	—	2	0
Colorado.....	5	9	—	—	3	4	1	1
New Mexico.....	10	5	—	—	—	1	0	0
Arizona.....	18	6	3	—	—	—	0	0
Utah.....	2	—	4	2	1	1	2	1

¹ New York City only.

² Week ended Friday.

³ Figures for 1929 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended October 26, 1929, and October 27, 1928—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928
Pacific States:								
Washington.....	33	7	12	-----	12	23	6	0
Oregon.....	7	26	10	25	14	13	0	1
California.....	75	92	32	1,392	40	14	6	5
Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928	Week ended Oct. 26, 1929	Week ended Oct. 27, 1928
New England States:								
Maine.....	0	1	24	16	0	7	3	6
New Hampshire.....	0	0	16	11	0	1	0	1
Vermont.....	0	0	3	6	0	3	0	0
Massachusetts.....	7	9	175	103	0	0	7	5
Rhode Island.....	1	0	16	8	0	0	1	2
Connecticut.....	1	6	33	22	0	0	3	1
Middle Atlantic States:								
New York.....	14	20	169	150	25	0	29	84
New Jersey.....	1	3	69	56	0	1	8	11
Pennsylvania.....	9	8	255	164	2	0	59	25
East North Central States:								
Ohio.....	11	8	202	164	56	6	29	19
Indiana.....	0	1	61	67	31	24	3	20
Illinois.....	3	6	285	174	74	19	24	26
Michigan.....	8	1	153	136	38	11	7	8
Wisconsin.....	0	0	62	88	6	12	2	8
West North Central States:								
Minnesota.....	2	8	74	72	5	1	4	6
Iowa.....	7	1	69	45	23	0	2	3
Missouri.....	0	0	86	87	6	5	9	11
North Dakota.....	1	3	17	22	12	0	3	1
South Dakota.....	0	0	11	15	21	2	1	2
Nebraska.....	0	0	8	31	3	4	2	2
Kansas.....	0	1	60	72	13	9	2	9
South Atlantic States:								
Delaware.....	1	1	3	0	0	0	0	1
Maryland ¹	1	3	61	28	0	0	18	24
District of Columbia.....	1	1	7	14	0	0	1	0
Virginia.....	9	-----	-----	-----	6	-----	-----	-----
West Virginia.....	5	7	46	101	1	6	24	40
North Carolina.....	4	2	138	150	2	3	17	25
South Carolina.....	5	3	37	21	0	0	28	19
Georgia.....	4	0	64	35	0	0	15	27
Florida.....	0	0	13	3	0	0	3	0
East South Central States:								
Kentucky.....	1	0	72	56	7	2	10	13
Tennessee.....	2	1	52	52	1	0	18	59
Alabama.....	0	3	79	35	0	3	32	32
Mississippi.....	0	1	38	20	0	1	14	13
West South Central States:								
Arkansas.....	0	2	36	32	0	0	11	15
Louisiana.....	0	0	21	8	0	1	11	13
Oklahoma ¹	0	1	37	50	8	2	24	50
Texas.....	1	2	31	8	2	4	7	16
Mountain States:								
Montana.....	1	1	26	7	8	21	18	4
Idaho.....	0	3	14	6	4	10	0	1
Wyoming.....	0	0	7	15	1	12	0	1
Colorado.....	0	3	13	16	5	5	10	7
New Mexico.....	0	1	10	13	1	0	12	14
Arizona.....	0	0	6	1	0	0	1	1
Utah ¹	0	1	6	14	0	3	2	2
Pacific States:								
Washington.....	0	15	42	22	35	10	8	6
Oregon.....	2	3	16	21	10	30	3	2
California.....	0	7	145	174	31	13	10	14

¹ Week ended Friday.¹ Figures for 1929 are exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Malaria	Measles	Pellag- ra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>August, 1929</i>										
Delaware.....		4		1	4		0	2	0	17
Florida.....	3	59	1	185	4	18	4	11	0	17
<i>September, 1929</i>										
District of Columbia.....	0	48	3		4		1	22	0	7
Florida.....	1	69	1	129	5	3	1	14	0	4
Idaho.....	11	8	1		32		5	35	41	8
Louisiana.....	2	111	40	228	23	38	0	57	4	95
Mississippi.....	0	201	297	12,564	33	794	2	169	0	148
Montana.....	5	7	9		263		0	46	30	132
North Carolina.....	10	829	15		12	54	14	409	20	151
Oklahoma ¹	5	162	84	578	46	51	4	105	7	172
Oregon.....		15	20	12	15		4	22	23	20
Pennsylvania.....	33	464		6	230		44	405	3	196
Rhode Island.....	0	32	1		3	1	3	11	0	8
South Carolina.....		386	468	900	4	95	1	44	0	26
South Dakota.....		16			9		0	31	39	14
Washington.....	13	55	15	1	25		3	102	56	40
Wisconsin.....	5	72	127		206		1	180	24	53

¹ Exclusive of Oklahoma City and Tulsa.

<i>August, 1929</i>		Cases	Dengue:	Cases
Chicken pox:			Mississippi.....	57
Delaware.....	2		South Carolina.....	3
Florida.....	1		Diarrhea:	
Dysentery:			South Carolina.....	146
Florida.....	10		Dysentery:	
Lethargic encephalitis:			Louisiana.....	1
Florida.....	1		Mississippi (amebic).....	87
Mumps:			Mississippi (bacillary).....	709
Florida.....	13		Oklahoma ¹	21
Rabies in man:			Pennsylvania.....	6
Florida.....	1		Washington.....	1
Typhus fever:			German measles:	
Florida.....	1		North Carolina.....	3
Whooping cough:			Pennsylvania.....	9
Delaware.....	6		Rhode Island.....	2
Florida.....	34		Washington.....	6
			Wisconsin.....	6
<i>September, 1929</i>			Hookworm disease:	
Chicken pox:			Louisiana.....	11
District of Columbia.....	4		Mississippi.....	301
Florida.....	4		South Carolina.....	33
Idaho.....	31		Impetigo contagiosa:	
Mississippi.....	147		Oregon.....	15
Montana.....	25		Washington.....	2
North Carolina.....	74		Lethargic encephalitis:	
Oklahoma ¹	2		Louisiana.....	2
Oregon.....	25		Montana.....	1
Pennsylvania.....	200		Pennsylvania.....	4
Rhode Island.....	3		Washington.....	6
South Carolina.....	17		Wisconsin.....	2
South Dakota.....	11		Mumps:	
Washington.....	121		Florida.....	11
Wisconsin.....	132		Idaho.....	35
Conjunctivitis:			Louisiana.....	2
Oklahoma ¹	2		Mississippi.....	96

¹ Exclusive of Oklahoma City and Tulsa.

¹ Exclusive of Oklahoma City and Tulsa.

Mumps—Continued.	Cases	Trachoma:	Cases
Montana.....	68	Mississippi.....	6
Oklahoma ¹	3	Oklahoma ¹	15
Oregon.....	48	Pennsylvania.....	1
Pennsylvania.....	163	South Dakota.....	16
South Carolina.....	7	Trench mouth:	
South Dakota.....	7	Oklahoma ¹	1
Washington.....	120	Trichinosis:	
Wisconsin.....	73	South Dakota.....	2
Ophthalmia neonatorum:		Tularaemia:	
Idaho.....	1	Louisiana.....	2
Louisiana.....	2	North Carolina.....	1
Mississippi.....	16	Typhus fever:	
North Carolina.....	1	Florida.....	7
Oklahoma ¹	1	Undulant fever:	
Pennsylvania.....	9	Florida.....	1
Rhode Island.....	1	Mississippi.....	1
South Carolina.....	2	Oregon.....	2
Paratyphoid fever:		Pennsylvania.....	11
North Carolina.....	1	South Carolina.....	2
Oregon.....	1	Washington.....	10
South Carolina.....	1	Wisconsin.....	2
Puerperal septicemia:		Vincent's angina:	
Mississippi.....	19	Oklahoma ¹	3
Pennsylvania.....	11	Oregon.....	1
Washington.....	6	Washington.....	8
Rabies in animals:		Whooping cough:	
Louisiana.....	6	District of Columbia.....	22
Mississippi.....	7	Florida.....	21
Rhode Island.....	1	Idaho.....	31
South Carolina.....	10	Louisiana.....	24
Rabies in man:		Mississippi.....	733
Mississippi.....	1	Montana.....	15
Scabies:		North Carolina.....	746
Oregon.....	2	Oklahoma ¹	32
Septic sore throat:		Oregon.....	35
Louisiana.....	6	Pennsylvania.....	1,352
Montana.....	2	Rhode Island.....	20
North Carolina.....	17	South Carolina.....	97
Oklahoma ¹	11	South Dakota.....	54
Oregon.....	9	Washington.....	205
Tetanus:		Wisconsin.....	733
Louisiana.....	7		
Pennsylvania.....	9		

¹ Exclusive of Oklahoma City and Tulsa.

¹ Exclusive of Oklahoma City and Tulsa.

ADMISSIONS TO HOSPITALS FOR THE INSANE, FEBRUARY, 1929

Reports for the month of February, 1929, showing new admissions to hospitals for the care and treatment of the insane, have been received by the Public Health Service from 104 institutions located in 37 States, the District of Columbia, and the Territory of Hawaii. The 104 hospitals had 83,278 male patients and 73,732 female patients on February 28, 1929, the ratio being 113 males per 100 females.

The following table shows the number of new admissions for the month of February, 1929, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	10	2	12
2. Senile psychoses.....	152	103	255
3. Psychoses with cerebral arteriosclerosis.....	139	67	206
4. General paralysis.....	169	55	224
5. Psychoses with cerebral syphilis.....	12	7	19
6. Psychoses with Huntington's chorea.....	2	0	2
7. Psychoses with brain tumor.....	1	2	3
8. Psychoses with other brain or nervous disease.....	25	9	34
9. Alcoholic psychoses.....	118	13	131
10. Psychoses due to drugs and other exogenous toxins.....	11	7	18
11. Psychoses with pellagra.....	3	9	12
12. Psychoses with somatic diseases.....	45	37	82
13. Manic-depressive psychoses.....	152	174	326
14. Involution melancholia.....	9	19	28
15. Dementia præcox (schizophrenia).....	285	223	508
16. Paranoia and paranoid conditions.....	27	23	50
17. Epileptic psychoses.....	40	21	61
18. Psychoneuroses and neuroses.....	12	24	36
19. Psychoses with psychopathic personality.....	17	6	23
20. Psychoses with mental deficiency.....	40	30	70
21. Undiagnosed psychoses.....	99	90	189
22. Without psychosis.....	158	41	199
Total.....	1,526	962	2,488

Sixty-one and three-tenths per cent of the new admissions were males and 38.7 per cent were females, giving a ratio of 159 males per 100 females. Of the 157,010 patients, 7,494 males and 6,142 females were on parole at the end of the month—9.0 per cent of the male patients, 8.3 per cent of the females, and 8.7 per cent of the total patients being on parole or otherwise absent, but still on the books.

Cases of dementia præcox constituted 20.4 per cent of the first admissions; manic-depressive psychoses, 13.1 per cent; senile psychoses, 10.2 per cent; general paralysis, 9.0 per cent; psychoses with cerebral arteriosclerosis, 8.3 per cent; without psychosis, 8.0 per cent and undiagnosed psychoses, 7.6 per cent.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,300,000. The estimated population of the 89 cities reporting deaths is more than 29,730,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended October 19, 1929, and October 20, 1928

	1929	1928	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	2,376	2,161	-----
96 cities.....	819	738	1,015
Measles:			
45 States.....	1,394	1,427	-----
96 cities.....	182	237	-----
Meningococcus meningitis:			
45 States.....	106	70	-----
96 cities.....	58	48	-----
Poliomyelitis:			
46 States.....	131	138	-----
Scarlet fever:			
46 States.....	2,694	2,406	-----
96 cities.....	833	655	719
Smallpox:			
46 States.....	353	242	-----
96 cities.....	71	17	15
Typhoid fever:			
46 States.....	637	665	-----
96 cities.....	105	106	118
<i>Deaths reported</i>			
Influenza and pneumonia:			
89 cities.....	598	648	-----
Smallpox:			
89 cities.....	1	0	-----
Tacoma, Wash.....	1	0	-----

City reports for week ended October 19, 1929

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1920 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland.....	78,600	0	1	0	-----	0	0	0	2
New Hampshire:									
Concord.....	(1)	0	0	0	-----	0	0	0	1
Manchester.....	85,700	0	2	0	-----	0	0	0	3
Nashua.....	(1)	0	0	0	-----	0	0	0	0
Vermont:									
Barre.....	(1)	0	0	0	-----	0	0	0	1
Massachusetts:									
Boston.....	799,200	27	38	33	1	0	9	17	14
Fall River.....	134,300	2	4	1	-----	0	0	0	1
Springfield.....	149,800	7	4	5	-----	0	1	1	1
Worcester.....	197,600	10	4	2	-----	0	15	2	1
Rhode Island:									
Pawtucket.....	73,100	0	1	0	-----	0	0	0	3
Providence.....	286,300	1	7	7	-----	0	1	0	8
Connecticut:									
Bridgeport.....	(1)	0	6	1	1	1	0	0	1
Hartford.....	172,300	-----	5	-----	-----	-----	-----	-----	-----
New Haven.....	187,900	2	1	4	1	0	0	2	6

¹ No estimate of population made.

City reports for week ended October 19, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC									
New York:									
Buffalo.....	555,800	15	14	22	—	0	1	3	21
New York.....	6,017,500	50	135	103	22	9	8	27	134
Rochester.....	328,200	14	7	1	—	0	0	1	4
Syracuse.....	199,300	7	6	0	—	0	0	23	4
New Jersey:									
Camden.....	135,400	0	7	4	—	0	0	0	1
Newark.....	473,600	13	13	19	—	0	3	7	3
Trenton.....	139,000	0	2	2	—	0	0	0	2
Pennsylvania:									
Philadelphia.....	2,064,200	17	54	21	1	1	2	29	49
Pittsburgh.....	673,800	19	26	10	—	3	22	0	25
Reading.....	115,400	1	1	0	—	0	0	0	1
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	413,700	4	11	10	—	1	1	2	9
Cleveland.....	1,010,300	49	50	15	8	2	2	7	9
Columbus.....	299,000	7	8	2	1	1	8	1	4
Toledo.....	313,200	27	14	2	1	1	48	1	4
Indiana:									
Fort Wayne.....	105,300	0	5	0	—	0	0	0	2
Indianapolis.....	382,100	0	15	4	—	0	2	2	8
South Bend.....	86,100	0	3	0	—	0	0	0	1
Terre Haute.....	73,500	4	3	0	—	0	1	0	3
Illinois:									
Chicago.....	3,157,400	67	81	131	9	5	14	7	53
Springfield.....	67,200	5	1	0	3	2	0	0	0
Michigan:									
Detroit.....	1,378,900	57	63	74	—	1	19	11	23
Flint.....	148,800	2	8	1	—	0	0	1	3
Grand Rapids.....	164,200	8	4	0	—	1	0	0	4
Wisconsin:									
Kenosha.....	56,500	3	1	1	—	0	0	0	0
Madison.....	50,500	2	0	0	—	0	3	0	0
Milwaukee.....	544,200	16	20	5	1	1	6	10	5
Racine.....	74,400	0	2	0	—	0	0	0	0
Superior.....	(1)	5	0	0	—	0	9	1	3
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	116,800	8	3	0	—	0	1	1	2
Minneapolis.....	455,900	53	31	8	—	1	5	7	5
St. Paul.....	(1)	9	15	0	—	0	0	1	3
Iowa:									
Davenport.....	(1)	1	1	0	—	—	0	0	—
Des Moines.....	151,900	0	5	1	—	—	0	0	—
Sioux City.....	80,000	2	2	0	—	—	2	0	—
Waterloo.....	37,100	9	0	4	—	—	0	0	—
Missouri:									
Kansas City.....	391,000	16	10	8	—	1	0	0	5
St. Joseph.....	78,500	1	2	1	—	0	0	0	2
St. Louis.....	848,100	2	45	41	1	1	3	2	—
North Dakota:									
Fargo.....	(1)	8	0	0	—	0	0	0	0
Grand Forks.....	(1)	8	0	0	—	—	0	0	—
South Dakota:									
Sioux Falls.....	(1)	0	0	0	—	—	1	0	—
Nebraska:									
Omaha.....	222,800	5	14	17	—	0	5	0	3
Kansas:									
Topeka.....	62,800	33	2	1	—	0	0	4	3
Wichita.....	96,300	5	4	7	—	0	0	0	0
SOUTH ATLANTIC									
Delaware:									
Wilmington.....	128,500	1	3	2	—	0	0	0	1
Maryland:									
Baltimore.....	830,400	20	25	20	1	1	1	1	10
Cumberland.....	(1)	0	0	0	—	0	0	0	0
Frederick.....	(1)	0	1	0	—	0	0	0	0

1 No estimate of population made.

City reports for week ended October 19, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—CON.									
District of Columbia:									
Washington.....	552,000	4	19	8	-----	0	1	0	
Virginia:									
Lynchburg.....	38,600	2	4	1	-----	0	0	0	1
Norfolk.....	184,200	9	2	0	-----	0	0	2	2
Richmond.....	194,400	1	26	20	-----	3	1	0	3
Roanoke.....	64,600	0	8	3	-----	0	0	0	0
West Virginia:									
Charleston.....	55,200	0	2	3	1	0	0	0	0
Wheeling.....	(1)	0	2	0	-----	0	0	0	1
North Carolina:									
Raleigh.....	(1)	0	4	2	-----	0	0	0	3
Wilmington.....	39,100	0	1	3	-----	0	0	0	1
Winston-Salem.....	80,000	0	6	8	-----	0	0	1	2
South Carolina:									
Charleston.....	75,900	0	1	0	11	0	0	0	2
Columbia.....	50,600	1	2	3	-----	0	0	0	0
Georgia:									
Atlanta.....	255,100	1	11	19	16	0	0	0	6
Brunswick.....	(1)	0	0	0	-----	0	0	0	0
Savannah.....	99,900	0	2	0	13	1	2	0	3
Florida:									
Miami.....	156,700	0	1	5	2	0	1	1	1
Tampa.....	113,400	0	2	4	-----	0	0	0	2
EAST SOUTH CENTRAL									
Kentucky:									
Covington.....	59,000	2	2	1	-----	0	0	0	0
Tennessee:									
Memphis.....	190,200	0	8	13	-----	0	0	0	5
Nashville.....	139,600	1	6	0	-----	0	0	0	4
Alabama:									
Birmingham.....	222,400	1	6	10	-----	1	0	1	6
Mobile.....	69,600	0	2	0	1	0	0	0	0
Montgomery.....	63,100	0	4	1	1	-----	0	0	-----
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith.....	(1)	0	3	5	-----	-----	0	0	-----
Little Rock.....	79,200	0	3	2	-----	0	0	0	3
Louisiana:									
New Orleans.....	429,400	0	10	15	3	3	0	0	10
Shreveport.....	81,300	0	2	6	-----	0	0	0	3
Oklahoma:									
Tulsa.....	170,500	4	4	8	-----	-----	1	0	-----
Texas:									
Dallas.....	217,800	0	15	30	-----	0	1	0	1
Fort Worth.....	170,600	0	5	4	-----	0	0	0	0
Galveston.....	50,600	0	0	0	-----	0	0	0	0
Houston.....	(1)	1	6	20	1	1	0	0	3
San Antonio.....	218,100	0	3	11	-----	0	0	1	3
MOUNTAIN									
Montana:									
Billings.....	(1)	0	0	0	-----	0	0	1	1
Great Falls.....	(1)	1	1	0	-----	0	0	10	2
Helena.....	(1)	0	0	0	-----	0	0	4	0
Missoula.....	(1)	0	0	0	-----	0	0	9	2
Idaho:									
Boise.....	(1)	2	0	0	-----	0	0	0	0
Colorado:									
Denver.....	294,200	16	16	8	-----	0	3	6	8
Pueblo.....	44,200	0	3	0	-----	1	0	0	0
New Mexico:									
Albuquerque.....	(1)	0	1	0	-----	0	0	0	2
Utah:									
Salt Lake City.....	138,000	10	4	0	-----	0	3	11	1
Nevada:									
Reno.....	(1)	0	0	0	-----	1	0	0	0

1 No estimate of population made.

City reports for week ended October 19, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases re-reported	Diphtheria		Influenza		Measles, cases re-reported	Mumps, cases re-reported	Pneumonia, deaths re-reported
			Cases, estimated expectancy	Cases re-reported	Cases re-reported	Deaths re-reported			
PACIFIC									
Washington:									
Seattle.....	383,200	49	5	0	-----		1	15	-----
Spokane.....	109,100	6	3	1	-----		2	0	-----
Tacoma.....	110,500	7	3	7	-----	0	0	0	1
Oregon:									
Portland.....	(1)	2	11	2	-----	0	0	4	4
Salem.....	(1)	2	0	0	-----	0	0	3	0
California:									
Los Angeles.....	(1)	13	40	20	14	2	0	7	20
Sacramento.....	75,700	1	2	0	-----	0	0	11	3
San Francisco.....	585,300	39	17	8	-----	0	27	9	2

Division, State, and city	Scarlet fever		Smallpox			Tuber- culis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	1	6	0	0	0	0	0	0	0	5	20
New Hampshire:											
Concord.....	0	0	0	0	0	1	0	0	0	0	15
Manchester.....	1	0	0	0	0	1	0	0	0	0	21
Nashua.....	0	0	0	0	0	0	0	0	0	0	12
Vermont:											
Barre.....	0	0	0	0	0	2	0	0	0	0	3
Massachusetts:											
Boston.....	33	49	0	0	0	13	3	2	0	21	170
Fall River.....	2	0	0	0	0	2	0	0	0	4	29
Springfield.....	5	1	0	0	0	1	0	0	1	5	30
Worcester.....	8	7	0	0	0	3	0	1	0	8	50
Rhode Island:											
Pawtucket.....	0	0	0	0	0	0	0	0	0	0	16
Providence.....	4	3	0	0	0	2	0	0	0	2	65
Connecticut:											
Bridgeport.....	4	5	0	0	0	1	0	0	0	0	29
Hartford.....	3		0				0				
New Haven.....	4	1	0	0	0	1	2	0	0	3	44
MIDDLE ATLANTIC											
New York:											
Buffalo.....	14	22	0	0	0	5	1	0	0	10	156
New York.....	64	35	0	0	0	105	24	9	1	38	1,369
Rochester.....	4	6	0	0	0	0	1	0	0	1	72
Syracuse.....	5	4	0	0	0	0	1	0	0	13	51
New Jersey:											
Camden.....	2	3	0	0	0	0	0	0	0	4	33
Newark.....	7	3	0	0	0	5	1	0	0	32	82
Trenton.....	1	4	0	0	0	7	1	1	0	0	28
Pennsylvania:											
Philadelphia.....	42	36	0	0	0	25	9	6	1	20	489
Pittsburgh.....	32	28	0	0	0	5	1	1	0	16	151
Reading.....	1	3	0	0	0	0	0	0	0	1	23
EAST NORTH CEN- TRAL											
Ohio:											
Cincinnati.....	10	24	0	0	0	3	1	8	0	1	148
Cleveland.....	21	25	0	0	0	16	2	1	0	39	197
Columbus.....	8	8	0	0	0	3	0	1	1	0	60
Toledo.....	9	10	0	0	0	5	2	2	0	5	67

1 No estimate of population made.

City reports for week ended October 19, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
EAST NORTH CENTRAL—CON.											
Indiana:											
Fort Wayne.....	1	0	0	3	0	0	1	0	0	0	21
Indianapolis.....	10	12	1	0	0	3	1	0	0	8	98
South Bend.....	2	3	1	0	0	1	0	0	0	1	18
Terre Haute.....	2	1	0	0	0	0	0	0	0	0	19
Illinois:											
Chicago.....	60	143	0	0	0	52	6	2	0	63	682
Springfield.....	2	1	0	0	0	1	0	0	0	6	25
Michigan:											
Detroit.....	54	64	1	2	0	27	4	1	0	48	284
Flint.....	8	19	0	6	0	0	1	0	0	0	25
Grand Rapids.....	7	5	1	0	0	0	0	0	0	6	34
Wisconsin:											
Kenosha.....	1	1	0	0	0	0	0	0	0	1	7
Madison.....	1	0	0	0	0	0	0	0	0	0	95
Milwaukee.....	18	22	0	0	0	4	0	2	0	21	18
Racine.....	3	3	0	0	0	1	0	0	0	5	9
Superior.....	2	5	0	0	0	1	0	0	0	3	
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	7	6	0	0	0	1	1	0	0	2	14
Minneapolis.....	36	6	1	2	0	3	2	3	0	4	82
St. Paul.....	17	13	2	0	0	4	1	3	0	5	67
Iowa:											
Davenport.....	1	0	0	1	0	0	0	0	0	0	26
Des Moines.....	9	15	0	0	0	0	0	0	0	0	
Sioux City.....	2	0	0	0	0	0	0	0	0	5	
Waterloo.....	1	3	0	5	0	1	1	0	0	2	
Missouri:											
Kansas City.....	11	23	0	0	0	7	2	0	1	6	107
St. Joseph.....	2	0	0	3	0	0	0	0	0	0	26
St. Louis.....	28	11	0	0	0	21	4	5	1	8	191
North Dakota:											
Fargo.....	2	6	0	0	0	0	0	0	0	1	
Grand Forks.....	0	0	0	6	0	0	0	0	0	0	
South Dakota:											
Sioux Falls.....	1	0	1	37	0	0	0	0	0	0	9
Nebraska:											
Omaha.....	4	4	0	0	0	1	0	1	1	0	52
Kansas:											
Topeka.....	4	10	0	1	0	1	0	0	0	5	18
Wichita.....	5	8	0	0	0	1	0	1	0	0	21
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	4	1	0	0	0	0	1	0	0	1	31
Maryland:											
Baltimore.....	11	15	0	0	0	17	7	6	2	22	220
Cumberland.....	1	0	0	0	0	0	1	1	0	0	10
Frederick.....	0	0	0	0	0	0	0	0	0	0	1
Dist. of Columbia:											
Washington.....	13	10	0	0	0	12	3	3	0	0	131
Virginia:											
Lynchburg.....	3	2	0	0	0	0	0	1	1	27	9
Norfolk.....	1	7	0	0	0	0	0	0	0	1	
Richmond.....	8	0	0	0	0	3	1	0	0	3	53
Roanoke.....	3	2	0	0	0	0	1	0	0	0	20
West Virginia:											
Charleston.....	2	2	0	0	0	2	1	0	0	8	19
Wheeling.....	3	0	0	0	0	0	1	0	0	1	13
North Carolina:											
Raleigh.....	3	0	0	0	0	0	0	1	0	0	18
Wilmington.....	1	1	0	0	0	0	0	0	0	0	10
Winston-Salem.....	3	6	0	0	0	1	0	1	0	1	14
South Carolina:											
Charleston.....	1	1	0	0	0	5	1	0	0	3	23
Columbia.....	1	1	0	0	0	2	0	0	0	5	18

City reports for week ended October 19, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
SOUTH ATLANTIC— continued											
Georgia:											
Atlanta.....	7	19	0	0	0	4	2	0	0	0	89
Brunswick.....	0	0	0	0	0	1	0	0	0	0	3
Savannah.....	1	5	0	0	0	2	1	0	0	0	39
Florida:											
Miami.....	1	0	0	0	0	1	0	0	0	2	18
Tampa.....	0	3	0	0	0	0	0	0	0	0	28
EAST SOUTH CEN- TRAL											
Kentucky:											
Covington.....	2	0	0	0	0	2	0	0	0	0	22
Tennessee:											
Memphis.....	5	16	0	0	0	10	3	6	1	1	59
Nashville.....	3	0	0	0	0	3	4	1	0	1	1
Alabama:											
Birmingham...	5	16	0	0	0	7	2	1	0	0	77
Mobile.....	0	0	0	0	0	1	0	1	0	0	22
Montgomery...	0	2	0	0			0	1		1	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	1	9	0	0			1	0		0	
Little Rock.....	5	1	0	0	0	3	1	0	0	0	
Louisiana:											
New Orleans...	3	9	0	0	0	15	3	0	0	0	138
Shreveport.....	1	1	0	0	0	2	1	1	0	2	21
Oklahoma:											
Tulsa.....	2	11	0	2			1	0		6	
Texas:											
Dallas.....	6	2	0	0	0	2	2	0	0	0	55
Fort Worth.....	2	2	0	0	0	1	0	0	0	0	28
Galveston.....	0	0	0	0	0	0	0	1	0	0	16
Houston.....	1	5	0	0	0	2	0	2	0	0	70
San Antonio...	0	0	0	0	0	3	0	0	0	0	52
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	12
Great Falls.....	1	7	1	0	0	0	0	0	0	0	9
Helena.....	1	0	0	0	0	0	0	10	0	0	3
Missoula.....	0	0	0	12	0	1	0	5	2	0	12
Idaho:											
Boise.....	0	2	0	2	0	0	0	0	0	0	5
Colorado:											
Denver.....	8	5	0	0	0	7	1	0	0	12	85
Pueblo.....	1	1	0	0	0	0	0	2	0	3	13
New Mexico:											
Albuquerque...	1	0	0	0	0	0	1	0	1	0	13
Utah:											
Salt Lake City...	2	1	1	0	0	1	2	5	1	3	28
Nevada:											
Reno.....	0	2	0	0	0	0	0	0	0	0	6
PACIFIC											
Washington:											
Seattle.....	7	10	0	1			1	3		13	
Spokane.....	7	1	1	0			1	1		0	
Tacoma.....	2	4	2	32	1	0	1	1	0	0	27
Oregon:											
Portland.....	8	3	3	8	0	0	1	0	0	0	61
Salem.....	0	1	0	0	0	0	1	0	0	0	
California:											
Los Angeles...	15	17	2	0	0	22	3	2	0	23	255
Sacramento...	2	4	0	0	0	1	0	1	0	0	30
San Francisco...	10	11	1	2	0	7	1	0	1	3	125

City reports for week ended October 19, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Maine:									
Portland.....	1	0	0	0	0	0	1	0	0
Massachusetts:									
Boston.....	0	0	0	0	0	0	3	3	0
Fall River.....	0	0	0	0	0	0	0	1	0
Springfield.....	0	0	0	0	0	0	1	1	0
MIDDLE ATLANTIC									
New York:									
Buffalo.....	0	0	0	0	0	0	0	5	2
New York.....	16	9	2	2	0	0	14	2	1
Rochester.....	0	0	0	0	0	0	0	7	0
Syracuse.....	0	1	0	0	0	0	0	0	0
New Jersey:									
Newark.....	0	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	4	3	1	0	0	0	1	5	0
Pittsburgh.....	1	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	0	1	0	0	0	0	1	3	0
Cleveland.....	1	0	0	0	0	0	1	2	0
Columbus.....	0	0	0	0	0	0	0	0	1
Indiana:									
Fort Wayne.....	1	1	0	0	0	0	0	0	0
Illinois:									
Chicago ¹	5	1	0	0	0	0	4	4	0
Michigan:									
Detroit.....	10	7	0	0	0	0	1	5	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis.....	0	0	0	1	0	0	0	0	0
Iowa:									
Des Moines.....	0	0	0	0	0	0	0	4	0
Missouri:									
Kansas City.....	2	3	0	0	0	0	0	0	0
St. Louis.....	2	1	0	0	0	0	0	0	0
North Dakota:									
Fargo.....	1	0	0	0	0	0	0	0	0
Nebraska:									
Omaha.....	1	0	0	0	0	0	1	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore.....	0	0	0	0	1	0	1	0	0
District of Columbia:									
Washington.....	1	1	0	0	0	0	0	0	0
Virginia:									
Richmond.....	0	0	0	0	0	0	0	3	0
West Virginia:									
Charleston.....	0	0	0	0	0	0	0	1	0
Wheeling.....	1	0	0	0	0	0	0	0	0
North Carolina:									
Raleigh.....	0	1	0	0	0	2	0	0	0
Wilmington.....	0	0	0	0	1	1	0	0	0
Winston-Salem.....	0	0	0	0	2	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	1	0	0	0	0
Georgia:									
Atlanta.....	1	0	0	0	0	2	0	0	0
Savannah ¹	0	1	0	0	1	1	0	0	0

¹ Rabies (in man) 1 death at Chicago, Ill.¹ Typhus fever; 1 case at Savannah, Ga.

City reports for week ended October 19, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST SOUTH CENTRAL									
Alabama:									
Birmingham.....	0	0	0	1	1	1	0	1	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock.....	0	0	0	0	0	3	0	0	0
Louisiana:									
New Orleans.....	2	1	0	0	1	1	0	0	0
Texas:									
Fort Worth.....	0	0	0	0	0	1	0	1	0
Houston.....	0	0	0	0	0	1	0	0	0
San Antonio.....	0	0	0	0	0	0	0	1	0
MOUNTAIN									
Colorado:									
Denver.....	1	1	0	0	0	0	1	0	0
Utah:									
Salt Lake City.....	1	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Spokane.....	0	0	0	0	0	0	1	1	0
Oregon:									
Portland.....	0	0	0	0	0	0	0	2	1
California:									
Los Angeles.....	3	0	0	0	0	0	1	0	0
Sacramento.....	2	0	0	0	0	0	0	0	0
San Francisco.....	1	0	0	0	0	0	1	0	0

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended October 19, 1929, compared with those for a like period ended October 20, 1928. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have an estimated aggregate population of more than 31,000,000. The 91 cities reporting deaths have nearly 30,000,000 estimated population. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, September 15 to October 19, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928¹

DIPHTHERIA CASE RATES

	Week ended—									
	Sept. 21, 1929	Sept. 22, 1928	Sept. 28, 1929	Sept. 29, 1928	Oct. 5, 1929	Oct. 6, 1928	Oct. 12, 1929	Oct. 13, 1928	Oct. 19, 1929	Oct. 20, 1928
98 cities.....	75	79	83	88	97	100	² 111	117	³ 135	⁴ 126
New England.....	50	67	77	62	88	103	⁵ 95	124	⁶ 130	145
Middle Atlantic.....	54	63	60	72	62	84	75	83	88	84
East North Central.....	96	92	90	97	124	92	139	111	155	⁷ 133
West North Central.....	63	92	100	76	108	127	123	137	167	127
South Atlantic.....	114	92	112	138	129	134	139	210	180	241
East South Central.....	136	182	136	161	156	154	⁸ 294	231	170	231
West South Central.....	154	93	170	109	206	174	⁹ 260	211	352	199
Mountain.....	70	62	26	106	26	106	0	44	70	62
Pacific.....	20	54	67	72	57	64	62	70	90	72

MEASLES CASE RATES

	15	18	13	19	17	28	² 22	32	³ 30	⁴ 40
98 cities.....	32	48	18	55	34	85	⁵ 16	69	⁶ 64	179
New England.....	7	15	10	10	12	18	12	27	17	20
Middle Atlantic.....	17	20	13	22	12	23	29	31	40	⁷ 24
East North Central.....	6	18	10	14	10	43	23	49	31	76
West North Central.....	7	17	13	13	11	23	9	40	9	24
South Atlantic.....	7	7	0	0	0	0	⁸ 12	7	0	14
East South Central.....	8	4	12	8	0	4	⁹ 4	0	4	0
West South Central.....	26	0	44	9	35	41	61	53	52	71
Mountain.....	52	10	25	41	67	41	67	18	75	41
Pacific.....										

SCARLET FEVER CASE RATES

	68	63	95	77	102	99	² 115	113	³ 139	⁴ 111
98 cities.....	50	101	100	83	136	90	⁵ 164	138	⁶ 176	152
New England.....	25	24	42	38	48	42	48	58	69	69
Middle Atlantic.....	120	91	161	100	149	132	173	153	214	⁷ 137
East North Central.....	92	104	108	115	119	182	140	180	173	139
West North Central.....	66	71	105	80	120	121	139	142	127	124
South Atlantic.....	48	56	75	210	81	133	⁸ 159	154	231	133
East South Central.....	75	28	75	85	75	150	⁹ 134	97	107	73
West South Central.....	113	53	139	62	131	18	148	80	157	89
Mountain.....	70	77	87	87	132	113	90	97	117	151
Pacific.....										

SMALLPOX CASE RATES

	5	1	4	2	7	3	² 7	1	³ 12	⁴ 3
98 cities.....	0	0	0	0	0	0	⁵ 0	0	⁶ 0	0
New England.....	0	0	0	0	0	0	1	0	0	0
Middle Atlantic.....	10	1	3	1	7	5	3	2	7	⁷ 3
East North Central.....	6	4	8	2	2	2	13	0	21	2
West North Central.....	0	0	0	0	0	0	0	0	0	0
South Atlantic.....	0	0	0	7	48	0	⁸ 0	0	0	0
East South Central.....	0	4	0	4	0	0	⁹ 4	4	0	0
West South Central.....	52	0	96	9	52	9	96	9	122	62
Mountain.....	17	5	10	15	37	18	35	5	87	10
Pacific.....										

¹ The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1929 and 1928, respectively.

² Barre, Vt., Memphis and Nashville, Tenn., and Fort Smith, Ark., not included.

³ Hartford, Conn., not included.

⁴ South Bend, Ind., not included.

⁵ Barre, Vt., not included.

⁶ Memphis and Nashville, Tenn., not included.

⁷ Fort Smith, Ark., not included.

Summary of weekly reports from cities, September 15 to October 19, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Sept. 21, 1929	Sept. 22, 1928	Sept. 28, 1929	Sept. 29, 1928	Oct. 5, 1929	Oct. 6, 1928	Oct. 12, 1929	Oct. 13, 1928	Oct. 19, 1929	Oct. 20, 1928
98 cities.....	22	27	20	23	16	24	² 26	22	² 17	⁴ 18
New England.....	14	21	7	9	11	16	² 16	16	² 7	7
Middle Atlantic.....	14	23	12	26	14	25	10	20	8	23
East North Central.....	11	16	9	14	12	13	8	11	10	⁴ 7
West North Central.....	6	31	23	27	15	12	8	16	25	10
South Atlantic.....	26	33	17	27	30	33	26	38	24	40
East South Central.....	0	112	81	77	20	42	⁴ 37	63	68	42
West South Central.....	87	69	28	41	8	53	⁷ 28	28	16	8
Mountain.....	349	27	313	18	113	124	749	89	192	53
Pacific.....	7	18	10	13	10	28	7	29	20	13

INFLUENZA DEATH RATES

	2	4	5	6	6	7	⁸ 8	7	⁸ 8	⁴ 10
91 cities.....	2	2	2	5	5	7	⁸ 0	9	² 2	2
New England.....	0	5	5	2	7	7	8	4	6	7
Middle Atlantic.....	2	4	4	3	5	5	8	7	9	⁴ 7
East North Central.....	6	3	3	3	6	3	3	3	9	12
West North Central.....	2	4	6	8	7	10	11	4	9	6
South Atlantic.....	7	15	0	8	0	23	⁸ 14	15	7	46
East South Central.....	0	4	12	29	16	8	16	29	16	21
West South Central.....	9	0	17	0	0	18	26	9	17	62
Mountain.....	10	0	3	24	10	7	7	17	7	27
Pacific.....										

PNEUMONIA DEATH RATES

	54	68	67	68	77	87	⁸ 80	81	⁸ 97	⁴ 105
91 cities.....	29	76	72	60	36	51	⁸ 75	64	⁸ 96	126
New England.....	59	74	72	75	90	106	87	94	118	124
Middle Atlantic.....	47	59	54	51	61	76	65	67	81	⁴ 87
East North Central.....	39	61	81	81	106	89	54	64	69	77
West North Central.....	66	84	60	80	61	96	103	96	81	115
South Atlantic.....	67	69	118	123	30	107	⁸ 101	92	111	92
East South Central.....	65	12	97	100	118	100	118	79	90	75
West South Central.....	104	71	70	35	122	62	122	115	122	62
Mountain.....	59	91	39	64	49	47	59	54	55	98
Pacific.....										

² Barre, Vt., Memphis and Nashville, Tenn., and Fort Smith, Ark., not included.

³ Hartford, Conn., not included.

⁴ South Bend, Ind., not included.

⁵ Barre, Vt., not included.

⁶ Memphis and Nashville, Tenn., not included.

⁷ Fort Smith, Ark., not included.

⁸ Barre, Vt., Memphis and Nashville, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities of each group, approximated as of July 1, 1929 and 1928, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1929	1928	1929	1928
Total.....	98	91	31,568,400	31,062,700	29,095,100	29,498,600
New England.....	12	12	2,305,100	2,273,900	2,305,100	2,273,900
Middle Atlantic.....	10	10	10,809,700	10,702,200	10,809,700	10,702,200
East North Central.....	16	16	8,181,900	8,001,300	8,181,900	8,001,300
West North Central.....	12	9	2,712,100	2,673,300	1,736,900	1,708,100
South Atlantic.....	19	19	2,783,200	2,732,900	2,783,200	2,732,900
East South Central.....	6	5	767,900	745,500	704,200	682,400
West South Central.....	8	7	1,319,100	1,289,900	1,285,000	1,256,400
Mountain.....	9	9	598,800	590,200	598,800	590,200
Pacific.....	6	4	2,090,600	2,043,500	1,590,300	1,551,200

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended October 12, 1929.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases in eight Provinces for the week ended October 12, 1929, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Polio-myelitis	Smallpox	Typhoid fever
Prince Edward Island.....						
New Brunswick.....				1		9
Quebec.....				2	2	13
Ontario.....	2	2	1	43	1	14
Manitoba.....				4		2
Saskatchewan.....				3	13	
Alberta.....				2		7
British Columbia.....						
Total.....	2	2	1	55	16	45

Quebec Province—Communicable diseases—Week ended October 12, 1929.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended October 12, 1929, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	40	Scarlet fever.....	58
Diphtheria.....	46	Smallpox.....	2
German measles.....	4	Tuberculosis.....	44
Measles.....	52	Typhoid fever.....	13
Mumps.....	14	Whooping cough.....	53
Poliomyelitis.....	2		

CUBA

Provinces—Communicable diseases—Four weeks ended August 3, 1929.—During the four weeks ended August 3, 1929, cases of certain communicable diseases were reported in the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer.....		5		1			6
Chicken pox.....		5		1		2	8
Diphtheria.....		19	4	2	5	2	32
Malaria.....		14		1	20	49	84
Measles.....	5	35		8		1	49
Paratyphoid fever.....	1	6	3	4	4	11	29
Scarlet fever.....		5	1	1			7
Tetanus (infantile).....			1	1			2
Typhoid fever.....	27	92	90	83	25	43	360

CZECHOSLOVAKIA

Communicable diseases—August, 1929.—During the month of August, 1929, certain communicable diseases were reported in the Republic of Czechoslovakia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	30	3	Paratyphoid fever.....	31	1
Cerebrospinal meningitis.....	25	11	Puerperal fever.....	52	19
Diphtheria.....	882	55	Scarlet fever.....	1,178	18
Dysentery.....	60	5	Trachoma.....	125	---
Malaria.....	62	---	Typhoid fever.....	738	51

ITALY

Communicable diseases—Four weeks ended August 4, 1929.—During the four weeks ended August 4, 1929, communicable diseases were reported in Italy as follows:

Disease	July 8-14		July 15-21		July 22-28		July 29-Aug. 4	
	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected
Anthrax.....	30	22	43	32	98	70	60	46
Cerebrospinal meningitis.....	3	3	2	2	9	9	3	3
Chicken pox.....	120	69	94	16	185	102	124	79
Diphtheria.....	223	141	194	124	422	217	284	174
Dysentery.....	30	13	29	16	51	29	35	25
Lethargic encephalitis.....	3	3	4	4	7	6	6	6
Measles.....	1,330	291	968	222	2,021	385	865	277
Polio-myelitis.....	32	23	63	46	78	54	41	29
Scarlet fever.....	218	98	178	96	602	177	418	127
Smallpox.....	---	---	1	1	1	1	---	---
Typhoid fever.....	555	282	637	314	1,611	653	1,072	504

JAMAICA

Communicable diseases—Four weeks ended October 12, 1929.—During the four weeks ended October 12, 1929, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the Island of Jamaica outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chicken pox.....	---	11	Puerperal fever.....	---	4
Dysentery.....	2	15	Tuberculosis (pulmonary).....	---	49
Erysipelas.....	---	1	Typhoid fever.....	23	150
Leprosy.....	---	1			

VIRGIN ISLANDS

Communicable diseases—September, 1929.—During the month of September, 1929, cases of certain communicable diseases were reported in the Virgin Islands as follows:

St. Thomas and St. John:

Gonorrhea.....	4
Malaria.....	4
Pellagra.....	2
Syphilis.....	5
Tuberculosis.....	2
Uncinariasis.....	6

St. Croix:

Gonorrhea.....	2
Syphilis.....	20
Tuberculosis.....	2
Uncinariasis.....	3

YUGOSLAVIA

Communicable diseases—September, 1929.—During the month of September, 1929, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	114	13	Measles.....	67	11
Cerebrospinal meningitis.....	13	7	Rabies.....	2	2
Diphtheria.....	465	76	Scarlet fever.....	1,309	267
Dysentery.....	642	88	Tetanus.....	23	14
Glanders.....	1	-----	Typhoid fever.....	827	64
Lethargic encephalitis.....	1	1			

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Apr. 7- May 4, 1929	May 5- June 1, 1929	June 2-29, 1929	June 30- July 27, 1929	Week ended—									
					August, 1929					September, 1929				
					3	10	17	24	31	7	14	21	28	October, 1929 5 12 19 26
Dutch East Indies: Java—														
Batavia and West Java.....	C		58	47	69	33		55	40	39	38			
Plague-infected mts.....	D		56	47	68	32		56	40	39	38			
East Java and Madura.....	C	8			3	2	1		4	3				
Surabaya.....	D				11	3			4	3				P
Ecuador (see table below).					11	3								
Egypt:														
Alexandria.....	C	1	1	1	7	1	1	3	3	2	4	2	3	1 3 6 4
Assuan.....	C				3				1	1	2	1	1	1 3
Behetra.....	D				4									
Bent Susef.....	D				2									
Dakahlieh.....	D	7	6	2	4	1					1			
Gharbieh.....	D	2	1	1	1						2			
Girga.....	D	9	1	9	1		1	1	1		2			
Kena.....	C	1		1	1		1	1	1		2			4 1 4
Menoufeh Province.....	D				2									
Miniah.....	C				2									
Port Said.....	C	3	2	3	3	1	1	1	3					
Suez.....	D	2	1	2	1	1	1	1	3					
France: Paris.....	C				1									
Greece.....	C													
India: Patna.....	C													
Pirana.....	C													
Hawaii: Hamakua—Kukuihaele—Plague-infected rats.		6							1	1	1	1	1	1 1

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

[illegible]

Place	April, 1929	May, 1929	June, 1929	July, 1929	August, 1929	September, 1929	Place	April, 1929	May, 1929	June, 1929	July, 1929	August, 1929	September, 1929
British East Africa (see also table above):							Peru.....		10	16	11		
Kenya.....	C 4	22	69	1,263			Senegal:		5	8	3		
Uganda.....	D 262	2	1,215	973			Baol ¹	1	21	43	23	32	42
Ecuador: Guayaquil.....	C 19	1		1	6	7	Dakal ¹	6	17	67	9	13	34
Pague-infected rats.....	D 13	3	1	3	4	8	Louga ¹	4	11	45	45	65	26
Greece (see also table above).....	C 1			1	2	5	D.....					17	
Indo-China (see also table above).....	D 13			42	1	2	Rufisque ¹					121	108
Madagascar (see also table above).....	C 92			14			D.....					59	64
Ambositra Province.....	C 88			14			Thies ¹					22	1
Antsiraba Province.....	D 6			2	1		D.....	20	6	10	61	53	34
Itasy Province.....	C 2			2	1		D.....	20	3	6	34	33	28
Moramanga Province.....	C 3			1			Tiennouane ¹					161	188
Tananarive Province.....	D 78			16	11		D.....		10	50	96	119	55
	D 74			16	11								

¹ Incomplete reports.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Apr. 7- May 4, 1929	May 5- June 1, 1929	June 2- 26, 1929	June 27- July 27, 1929	Week ended—									
					August, 1929					September, 1929					October, 1929
	3	10	17	24	31	7	14	21	28	5	12	19	26	
Great Britain:														
England and Wales.....	1,423	1,179	789	541	129	114	120	139	131	150	96	119	108	97
Ashton under Lyne.....				7			1							
Birmingham.....	1	1							1	3	1	3	2	1
Bradford.....	1	4		3									1	
Bristol.....				1										
Cardiff.....	1	4						1					1	
Castleford.....			3	1										
Leeds.....	31	12	3	1				1		2				
London.....	201	193	167	107	31	19		28	37	41	27	39	40	26
London and Great Towns.....	888	656	496	393	73	60	74	90	79	81	59	85	81	60
Newcastle-on-Tyne.....	6	3	1	4										
Stoke-on-Trent.....	3	37	20	15	1	2	1	1	2	2	7	7	3	2
West Ham.....	133	86	62	32	1	10	20	6	2					5
Scotland—				26	22	17								
Aberdeen.....	2													
Glasgow.....	19	1												
Greece (see table below).														
Hedjaz.....	77	40	83	83	4	2		5	17	2	2	1	2	2
India.....	52	24	53	35	3	2		14	3	1				1
Honduras:														
Choluteca.....														
Puerto Castilla.....	22,590	17,011	11,549	7,838	1,717	1,435	1,194	1,135	1,166	1,043				
India.....	8,000	4,185	3,096	2,062	472	397	275	231	231	259				
Bombay.....	315	208	147	92	18	16	11	11	18	5	6	8	7	5
Calcutta.....	173	131	99	55	7	9	12	3	10	5	6	2	4	5
Cochin.....	101	39	27	16	13	2	3	6	7	7	9	3	1	5
Karachi.....	74	36	24	11	11	2	3	4	2	1	4	6	2	3
Madras.....	144	84	35	25	6	1	2	6	5	6	8	8	3	6
	59	59	25	13	1	1	1	4	4	6	3	3	3	3
	327	174	88	122	28	16	33	12	19	14	16	13	22	28
	84	61	20	32	8	6	2	6	13	4	7	7	3	3

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

[illegible]

Place	1929									
	March, 1929		April, 1929		May, 1929		June, 1929		July, 1929	
	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-31	1-10
City of Venice, at Suez, from Calcutta.....	C									
Gen, at Port Said, from Abadan.....	C									
British Birch, at Suez, from Abadan.....	C									
Kanah, at Suez, from Jeddah.....	C									
Le Ponto, at Suez, from Jeddah.....	C									
Lozan-Loret, at Suez.....	C									
Malwa, at Suez.....	C									
Mauca, at Suez.....	C									
Tuscanla, at Glasgow, from Bombay.....	C									
Umyuma, at Cape Town, from London.....	C									
Indo-China (see also table above).....	C									
Ivory Coast.....	C									
Senegal.....	C									
Sudan (French).....	C									
Syria: Beirut.....	C									
British East Africa (see also table above):										
Kenya.....	C									
Chosen.....	C									
Ecuador: Guayaquil.....	C									

1354 cases of smallpox were reported from June 16 to Oct. 11, 1929, in Panama City, Panama.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

(C indicates cases; D, deaths; P, present)

[illegible]

Place	March, 1929					April, 1929					May, 1929					June, 1929					July, 1929					August, 1929				
	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929	August, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929	August, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929	August, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929	August, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929	August, 1929
Kerry County—																														
Dingle.....																														
Killarney.....																														
Tyrone County—Strabane, ¹																														
Latvia (see table below).																														
Lithuania (see table below):																														
Mexico:																														
Aguascalientes.....																														
Mexico City, including municipalities in Federal District.....																														
Morocco.....																														
Norway: Oslo.....																														
Palestine.....																														
Peru.....																														
Poland.....																														
Portugal:																														
Lisbon.....																														
Oporto.....																														
Rumania.....																														
Tunisia.....																														
Turkey (see table below).																														
Union of South Africa:																														
Cape Province.....																														
Natal.....																														
Orange Free State.....																														
Transvaal.....																														
Yugoslavia (see table below):																														
Canada: Ontario.....																														
Chosen.....																														
Seoul.....																														
Czechoslovakia.....																														
Greece: Athens.....																														
Indo-China: Tonkin.....																														

¹ During the period from Apr. 14 to May 21, 1929, 18 cases of typhus fever with 4 deaths were reported in Strabane, Tyrone County, Ireland.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued
YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		Week ended—										
		August, 1929				September, 1929				October, 1929		
		3	10	17	24	31	7	14	21	28	5	12
	Mar. 10-1929	Apr. 7-1929	May 5-1929	June 2-1929	June 30-July 27, 1929							
Belgian Congo: Tumba.....	C	1										
Brazil:												
Bahia.....	C	1			1							
Niteroy.....	C											
Para.....	C	2	2				1					
Pernambuco.....	C	4	1		1							
Porto Alegre.....	C											
Rio de Janeiro.....	C	252	180	11	7	1	0	0	1	0	0	0
Colombia:	D	132	94	38	5	1						
Simacota.....	C					4						
Socorro.....	C					12						
Liberia: Monrovia.....	C	10	2		4	4						
On vessel:	D	4			3	1						
S. S. Skogland, at Porto Alegre, from Rio de Janeiro.....	C			1								

¹ Imported.

² From June 19 to July 8, 1929, 41 cases of yellow fever with 23 deaths were reported in Socorro, Columbia.